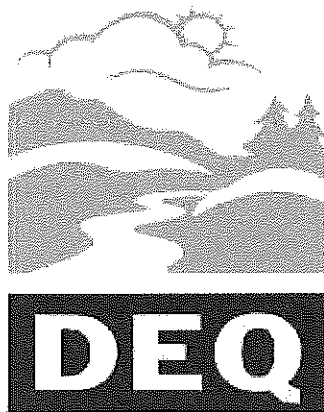


**OREGON
ENVIRONMENTAL QUALITY
COMMISSION MEETING
MATERIALS 04/14/1995**



**State of Oregon
Department of
Environmental
Quality**

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A G E N D A
ENVIRONMENTAL QUALITY COMMISSION MEETING
April 14, 1995
DEQ Conference Room 3A
811 S. W. 6th Avenue
Portland, Oregon

Friday, April 14, 1995: Regular Meeting beginning at 9:00 a.m.

Notes:

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

***Public Forum:** The Commission will break the meeting at approximately 11:30 a.m. for the Public Forum if there are people signed up to speak. The Public Forum is an opportunity for citizens to speak to the Commission on environmental issues and concerns not a part of the agenda for this meeting. Individual presentations will be limited to 5 minutes. The Commission may discontinue this forum after a reasonable time if an exceptionally large number of speakers wish to appear.*

TIME SPECIFIC ITEMS

9:00 a.m.

H. **‡Action Item:** National Marine Fisheries Service (NMFS) Request for Variance from Total Dissolved Gas (TDG)

1:30 p.m.

F. **Action Item:** Petition for Reconsideration of Limited Party Status/Appeal of Hearings Officer Decision in the Matter of Ross Bros. Construction, SWP-WR-94-274

Note: All other agenda items will be considered at the conclusion of item H with the exception of Public Forum (11:30) and Agenda Item F (1:30).

- A. Approval of Minutes
- B. Approval of Tax Credits
- C. †**Rule Adoption:** Temporary Rule: Revision of Divisions 94 and 95, Solid Waste Rules for Municipal and Non-Municipal Solid Waste
- D. **Action Item:** Lakeview PM₁₀ Control Plan, Revision to the Oregon Clean Air Act State Implementation Plan (SIP)
- E. **Action Item:** City of Portland's Combined Sewer Overflow Final Plan
- F. This item is scheduled for 1:30 p.m. See page 1 for details.
- G. **Action Item:** Request for Commission action on Memorandum of Understanding between EQC and Oregon Department of Agriculture, Re: Combined Animal Feeding Operations (CAFO)
- H. This item is scheduled for 9:00 a.m. See page 1 for details.
- I. Commissioner Reports (Oral)
- J. Director's Report (Oral)

†Hearings have already been held on the Rule Adoption items; therefore, any testimony received will be limited to comments on changes proposed by the Department in response to hearing testimony. The Commission also may choose to question interested parties present at the meeting.

‡The Commission may ask certain interested parties to briefly present information and answer questions at the April 14 EQC meeting. All public testimony, however, must be presented at the April 7, 1995 public hearing.

The Commission has set aside May 18-19, 1995, for their next meeting. The location has not been established.

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

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

April 4, 1995

Approved _____
Approved with Corrections _____

Minutes are not final until approved by the EQC

ENVIRONMENTAL QUALITY COMMISSION

**Special Meeting
February 16, 1995**

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

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

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

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

Chair Wessinger called the meeting to order.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Panel discussions occurred as follows:

- **Industrial/Business Panel**

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

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

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

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

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

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

- **Local Government Panel**

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

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

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

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

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

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

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

- **Environmental Panel**

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

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

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

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

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

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

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

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

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

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

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

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

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

Approved _____
Approved with Corrections _____

Minutes are not final until approved by the E2C

ENVIRONMENTAL QUALITY COMMISSION

Minutes of the Special Conference Call Meeting

March 11, 1995

Attending the special conference call meeting were William Wessinger, Chair; Henry Lorenzen, Carol Whipple and Linda McMahan, members. Vice Chair Castle was not able to attend this meeting. Also attending via the conference call were Lydia Taylor, Interim Director, Department of Environmental Quality, and Michael Huston, Assistant Attorney General, Oregon Department of Justice. The purpose of the special conference call was to deliberate about and possibly to determine the selection of a new director of the Department of Environmental Quality.

Chair Wessinger summarized the process of choosing the new director. He said the Commission started about three months ago. He said the position was nationally advertised and that the Commission received over a hundred applications. He said 13 applicants were selected to be interviewed and then the Commission narrowed the selection to three. Those three applicants were again interviewed by the Commission and Governor Kitzhaber.

Chair Wessinger indicated that he had spoken with Commissioner Castle about his thoughts about selecting the director.

Commissioner McMahan said she was impressed by the final three candidates and that they were extremely qualified. She said, however, that she was most impressed with Langdon Marsh. Commissioner Whipple agreed with Commissioner McMahan and indicated that she supported Langdon Marsh. Commissioner Lorenzen said that all three candidates were well qualified. Commissioner Lorenzen also added that Mr. Marsh brought a national perspective to the Department and that his management style and skills would fit in with staff. Chair Wessinger remarked that although Commissioner Castle had said that the decision was difficult to make, his first choice would be Langdon Marsh. Chair Wessinger said that a very close decision for him occurred between two of the three candidates and that he had done the research on one of the candidates and was extremely impressed; however, Langdon Marsh's qualifications were tremendous.

Environmental Quality Commission

- Rule Adoption Item
 Action Item
 Information Item

Agenda Item **B**
April 14 1995 Meeting

Title:

Approval of Tax Credit Applications

Summary:

New Applications - Eight (8) tax credit applications with a total facility cost of \$11,199,655 are recommended for approval as follows:

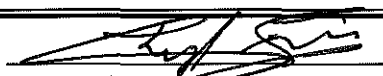
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|----------------------------------------------------------------------------------------------------------------|--------------|
| - 4 Water Quality facilities with a total facility cost of: | \$10,859,924 |
| - 1 UST water quality facility costing: | \$ 188,988 |
| - 1 Field Burning related facility recommended by the Department of Agriculture with a total facility cost of: | \$ 78,865 |
| - 2 Plastic product recycling facilities costing: | \$ 71,878 |

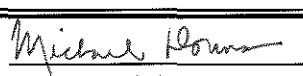
One application with claimed facility cost exceeding \$250,000 was reviewed by an independent accounting firm contractor. The review statement is attached to the application report.

Department Recommendation:

Approve issuance of tax credit certificates for 8 applications as presented in Attachment A of the staff report.

The Department also requests that the Commission grant a request by the Weyerhaeuser Company for an extension (to September 1, 1995) to file an application for pollution control tax credit relief; and that the Commission revoke certificate 2295, which provided tax credit relief for a facility that is replaced by equipment claimed in TC 4299, a tax credit request that is recommended for approval in this report.


Report Author


Division Administrator


Director

March 23, 1995

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

State of Oregon
Department of Environmental Quality

Memorandum[†]

Date: April 14, 1995

To: Environmental Quality Commission
From: Lydia Taylor, Interim Director
Subject: Agenda Item B, April 14, 1995 EQC Meeting
Approval of Tax Credit Applications

Statement of the Need for Action

This staff report presents the staff analysis of pollution control facilities tax credit applications and the Department's recommendation for Commission action on these applications. The following is a summary of the applications presented in this report:

Tax Credit Application Review Reports:

Application Number	Applicant	Description
TC 4220	Source Recycling, Inc. (\$65,390)	A reclaimed plastic facility consisting of a conveyor sorting system, roll-up door, forklift and baler conveyor belt for reclaiming and recycling plastic material.
TC 4299	Carmichael Columbia Oil, Inc. (\$188,988/79%)	A UST water pollution control facility consisting of four doublewall fiberglass tanks, piping, spill containment basins, a tank gauge system, float vent valves, automatic shutoff valves, line leak detectors, sumps, an oil/water separator, Stage I vapor recovery equipment and Stage II vapor recovery piping.
TC 4337	Carlton Truck Stop (\$22,110)	A water pollution control facility consisting of a Kracher wastewater treatment facility comprised of settlement, mixing and filter components.

[†]A large print copy of this report is available upon request.

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 Agenda Item B
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TC 4342	Ron Larvik, aka City Garbage Service (\$6,488)	A reclaimed plastic facility consisting of two 40 yd. drop boxes, four stellar hooks and ten instruction signs.
TC 4345	Portland Willamette, Buyers Industries (\$101,328/95%)	A water pollution control wastewater treatment facility consisting of electroplating, mesh painting and powder coating components.
TC 4346	Consolidated Metco, Inc. (\$19,500)	A water pollution control wastewater treatment facility consisting of a natural gas fired Asendor Wastewater Evaporator.
TC 4351	Kelly Farms, Inc. (\$78,865)	An air quality field burning facility consisting of a 162' x 74' x 27' steel structure straw storage building.

Tax Credit Application Review Reports With Facility Costs Over \$250,000 (Accountant Review Reports Attached).

Application Number	Applicant	Description
TC 4308	Ore-Ida Foods, Inc. (\$10,716,986)	A water pollution control facility consisting of the redesign and replacement of a wastewater treatment system for a vegetable processing plant.

Background

There is no discussion of significant issues included in this report. However, the Weyerhaeuser company requests an extension to file for a proposed Pollution Control Facilities Tax Credit until September 1, 1995. Weyerhaeuser indicates that circumstances beyond their control including accounting and engineering complications prevented timely completion of the application for the proposed credit. The firm's letter requesting the extension is included in this report.

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Authority to Address the Issue

ORS 468.150 through 468.190 and OAR 340-16-005 through 340-16-050 (Pollution Control Facilities Tax Credit).

ORS 468.925 through 468.965 and OAR 340-17-010 through 340-17-055 (Reclaimed Plastic Product Tax Credit).

Alternatives and Evaluation

None.

Summary of Any Prior Public Input Opportunity

The Department does not solicit public comment on individual tax credit applications during the staff application review process. Opportunity for public comment exists during the Commission meeting when the applications are considered for action.

Conclusions

- o The recommendations for action on the attached applications are consistent with statutory provisions and administrative rules related to the pollution control facilities and reclaimed plastic product tax credit programs.

Memo To: Environmental Quality Commission
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o Proposed April 14, 1995 Pollution Control Tax Credit Totals:

<u>Certificates</u>	<u>Certified Costs*</u>	<u>Certified Allocable Costs**</u>	<u>No.</u>
Air Quality	0	0	0
CFC	0	0	0
Field Burning	78,865	78,865	1
Hazardous Waste	0	0	0
Noise	0	0	0
Plastics	71,878	71,878	2
SW - Recycling	0	0	0
SW - Landfill	0	0	0
Water Quality	10,859,924	10,854,858	4
UST	<u>188,988</u>	<u>149,301</u>	<u>1</u>
	\$11,199,655	\$11,154,902	8

o Calendar Year Totals Through March 3, 1995:

<u>Certificates</u>	<u>Certified Costs*</u>	<u>Certified Allocable Costs**</u>	<u>No.</u>
Air Quality	\$ 94,402	\$ 94,402	1
CFC	0	0	0
Field Burning	460,388	359,974	6
Hazardous Waste	0	0	0
Noise	0	0	0
Plastics	0	0	0
SW - Recycling	0	0	0
SW - Landfill	0	0	0
Water Quality	681,699	681,699	8
UST	<u>0</u>	<u>0</u>	<u>0</u>
	\$1,236,489	\$1,136,075	15

*These amounts represent the total facility costs. The actual dollars that can be applied as credit is calculated by multiplying the total facility cost by the determined percent allocable and dividing by 2.

**These amounts represent the total eligible facility costs that are allocable to pollution control. To calculate the actual dollars that can be applied as credit, the certifiable allocable cost is multiplied by 50 percent.

Memo To: Environmental Quality Commission
Agenda Item B
April 14, 1995 Meeting
Page 5

Recommendation for Commission Action

It is recommended that the Commission approve certification for the tax credit applications as presented in Attachment A of the Department Staff Report. The Department also recommends the approval of the Weyerhaeuser Company's request for an extension of time to file a pollution control facilities tax credit application and the revocation of tax credit certificate 2295, Carmichael Columbia Oil, Inc.

Intended Followup Actions

Notify applicants of Environmental Quality Commission actions.

Attachments

- A. Pollution Control Tax Credit Application Review Reports.

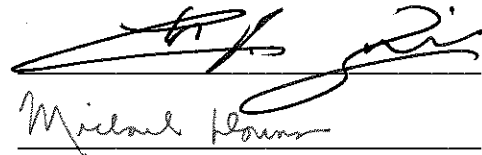
Reference Documents (available upon request)

- 1. ORS 468.150 through 468.190.
- 2. OAR 340-16-005 through 340-16-050.
- 3. ORS 468.925 through 468.965.
- 4. OAR 340-17-010 through 340-17-055.

Approved:

Section:

Division:



Michael Hovner

Report Prepared By: Charles Bianchi

Phone: 229-6149

Date Prepared: March 23, 1995

Charles Bianchi
APREQC
April 14, 1995

Application No. TC-4220

State of Oregon
Department of Environmental Quality

RECLAIMED PLASTIC TAX CREDIT
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Source Recycling, Inc.
Mike Huycke
P.O. Box 1
Corvallis, Oregon 97339

The applicant operates a recycling processing plant in Albany, Oregon.

Application was made for Reclaimed Plastic Tax Credit.

2. Description of Equipment, Machinery or Personal Property

The claimed equipment consisting of:

Conveyor sorting system
Roll-up Door
Forklift
Baler Conveyor Belt

Claimed equipment costs: \$65,390

An Accountant's Certification was provided.

. Procedural Requirements

The investment is governed by ORS 468.925 through 468.965, and by OAR Chapter 340, Division 17.

The investment met all statutory deadlines in that:

- a. The request for preliminary certification was received on March 14, 1994. The preliminary application was filed complete and the 30 day waiting period was waived on March 21, 1994.
- b. The request for preliminary certification was approved on April 6, 1994.

- c. The investment was made on April 25, 1994 and October 30, 1994.
- d. The request for final certification was submitted on December 20, 1994 and was filed complete on February 10 1995.

4. Evaluation of Application

- a. The investment is eligible because the equipment is necessary to process reclaimed plastic.
- b. Allocable Cost Findings

In determining the portion of the investment costs properly allocable to reclaiming and recycling plastic material, the following factors from ORS 468.960 have been considered and analyzed as indicated:

- 1) The extent to which the claimed collection, transportation, processing or manufacturing process is used to convert reclaimed plastic into a salable or usable commodity.

This factor is applicable because the purpose of this equipment is to receive, process and transport plastics for recycling.

- 2) The alternative methods, equipment and costs for achieving the same objective.

The applicant investigated other alternatives and determined that this equipment is the most efficient and productive from an economic standpoint.

- 3) Any other factors which are relevant in establishing the portion of the actual cost of the investment properly allocable to the collection, transportation or processing of reclaimed plastic or to the manufacture of a reclaimed plastic product.

No other factors were considered relevant.

The actual cost of the investment properly allocable to processing reclaimed plastic as determined by using these factors is 100%.

5. Summation

- a. The investment was made in accordance with all regulatory deadlines.
- b. The investment is eligible for final tax credit certification in that the equipment is necessary to manufacture a reclaimed plastic product.
- c. The qualifying business complies with DEQ statutes and rules.
- d. The portion of the investment cost that is properly allocable to reclaiming and recycling plastic is 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Reclaimed Plastic Tax Credit Certificate bearing the cost of \$65,390 with 100% allocated to reclaiming plastic material, be issued for the investment claimed in Tax Credit Application No. TC-4220.

RAP:Rick Paul
wp51\tax\tc4220rr.sta
(503) 229-5934
March 14, 1995

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Carmichael Columbia Oil, Inc.
510 Marine Drive
Astoria, OR 97103

The applicant owns and operates a retail gas station and commercial cardlock at 510 Marine Drive, Astoria, OR, Facility No. 7094.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks. The application also included related air quality Stage I vapor recovery and Stage II vapor recovery piping.

The applicant has claimed equipment in this application that replaced equipment claimed in prior tax credit TC-3232 issued in 1990. The equipment was replaced before the end of its useful life. See Section 2 below for an explanation of the adjustment made to costs claimed in this application. TC-3232 will be submitted for revocation.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are four doublewall fiberglass tanks and piping (one tank is 2-compartments), spill containment basins, tank gauge system, float vent valves, automatic shutoff valves, line leak detectors, sumps, oil/water separator and Stage I vapor recovery and Stage II vapor recovery piping.

Claimed facility cost \$192,396
(Accountant's certification was provided)

The Department concludes that the eligible facility cost for the project is \$188,988. This represents a difference of \$3408 from the applicant's claimed cost of \$192,396. This is due an adjustment made by the Department to the claimed cost of the tank gauge system, spill containment basins, float vent valves, piping for Stage II vapor recovery and installation of those items because they replaced the same equipment claimed in prior tax credit TC-3232 issued in 1990. The previously claimed equipment was replaced before the end of its useful life and the adjustment reflects the amount of the tax credit remaining pursuant to Oregon Administrative Rules 340-16-025(3)(g)(B). See attached Worksheet 1.

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility was substantially completed on December 7, 1993 and placed into operation on December 7, 1993. The application for certification was submitted to the Department on September 26, 1994 was considered to be complete and filed on February 9, 1995, within two years of the completion date of the project.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with underground storage tank requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil, water and air. This is accomplished by preventing releases into soil, water or air. The facility qualifies as a "pollution control facility", defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."

Prior to the installation of pollution control, the facility consisted of four steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to Air Quality regulations under OAR 340-22-400 - 403 and Underground Storage Tank requirements under OAR 340-Division 150, the applicant installed:

- 1) For corrosion protection - Doublewall fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins, float vent valves, sumps, oil/water separator and automatic shutoff valves.
- 3) For leak detection - Tank gauge system and line leak detectors.
- 4) For VOC reduction - Stage I vapor recovery and Stage II vapor recovery piping.

Based on information currently available, the applicant is in compliance with all applicable DEQ regulations in that these tanks are permitted and fee payments are current.

b. Eligible Cost Findings

In determining the percent of the eligible pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

- 1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The equipment does not recover or convert waste products into a salable or usable commodity.

- 2) The estimated annual percent return on the investment in the facility.

There is no annual percent return on investment as the applicant claims no gross annual income from the facility.

- 3) The alternative methods, equipment and costs for achieving the same pollution control objective.

The applicant did not indicate that alternatives were considered. The methods chosen are acceptable for meeting the requirements of federal regulations.

- 4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

The applicant claims no savings or increase in costs as a result of the installation.

- 5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to pollution control.

There are no other factors to consider in establishing the actual cost of the facility properly allocable to prevention, control of reduction of pollution.

The actual cost of the facility properly allocable to pollution control is determined by using these factors as displayed in the following table:

	Eligible Facility Cost	Percent Allocable	Amount Allocable
<u>Corrosion Protection:</u>			
Doublewall fiberglass tanks and piping	\$76,137	49% (1)	\$37,307
<u>Spill & Overfill Prevention:</u>			
Spill containment basins	876	100	876
Float vent valves	556	100	556
Oil/water separator	16,148	100	16,148
Sumps	4,453	100	4,453
Automatic shutoff valves	577	100	577
<u>Leak Detection:</u>			
Tank gauge system	3,240	90 (2)	2,916
Line leak detectors	2,632	100	2,632
Stage I vapor recovery	158	100	158
Stage II piping	3,335	100	3,335
Labor and materials	80,876	100	80,876
Total	\$188,988	79%	\$149,834

- (1) The Department has determined the percent allocable on the cost of a corrosion protected tank and piping system by using a formula based on the difference in cost between the protected tank and piping system and an equivalent bare steel system as a percent of the protected system. Applying this formula to the costs presented by the applicant, where the protected system cost is \$76,137 and the bare steel system is \$38,935, the resulting portion of the eligible tank and piping cost allocable to pollution control is 49%.
- (2) The applicant's cost for a tank gauge system is reduced to 90% of cost based on a determination by the Department that this is the portion properly allocable to pollution control since the device can serve other purposes, for example, inventory control.

5. Summation

- a. The facility was constructed in accordance with all regulatory requirements.
- b. The facility is eligible for tax credit certification in that the principal purpose of the claimed facility is to comply with requirements imposed by the federal Environmental Protection Agency to prevent pollution of soil, water and air. This is accomplished by preventing releases in soil, water or air. The facility qualifies as a "pollution control facility" defined in OAR 340-16-025(2)(g): "Installation or construction of facilities which will be used to detect, deter or prevent spills or unauthorized releases."
- c. The facility complies with DEQ statutes and rules.
- d. The portion of the facility cost that is properly allocable to pollution control is 79%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$188,988 with 79% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-4299.

Barbara J. Anderson
(503) 229-5870
February 9, 1995

WORKSHEET 1.

PRIOR TAX CREDIT REMAINING ADJUSTMENT WORKSHEET

CARMICHAEL-COLUMBIA OIL, INC.
 Current Application: TC-4299
 Prior Tax Credit: TC-3232

ADJUSTMENT OF CURRENT TAX CREDIT CLAIM BASED ON PRIOR TAX CREDIT REMAINING WHERE
 EQUIPMENT IS REPLACED BEFORE THE END OF ITS USEFUL LIFE (OAR 340-16-025(3)(g)(B))

A. DETERMINATION OF AMOUNT AND PERCENT OF PRIOR TAX CREDIT REMAINING:

Total amount of prior tax credit	=	\$27,572
Total tax credit claimed on income tax returns	=	(\$5,514)
Tax credit remaining, all expenses	=	\$22,058
Tax credit remaining as a percent (22,058 / 27,572)	=	80.00%

B. ADJUSTMENT OF CURRENT TAX CREDIT APPLICATION CLAIMED COSTS:

Total current claimed costs, items replaced	=	\$17,040
Adjusted total current claimed costs (17,040 X .80)	=	\$13,632

C. AMOUNT REMAINING TO BE CLAIMED (breakdown below) = \$13,632 (1)

ITEMS REPLACED	CURRENT APPLICATION CLAIMED COST	AMOUNT REMAINING TO BE CLAIMED (80%)
TOTAL	\$17,040	\$13,632
Tank gauge system	4,050	3,240
Spill Containment (4 basins)	834 (2)	667
Float vent valves	695	556
Piping for Stage II vapor recovery	4,169	3,335
Installation cost	7,292 (3)	5,834

D. AMOUNT OF ADJUSTMENT (17,040 - 13,632) = \$3,408
 =====

- (1) This is the full amount eligible to be claimed on the current tax credit application. The actual tax credit received will be no greater than 50% of that amount.
- (2) Prorated for comparability purposes (5 basins claimed on current application; 4 on prior tax credit).
- (3) Prorated from total project installation cost to represent installation cost of items replaced only.

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Carlton Truck Stop
P.O. Box 550
Carlton, OR 97111

The applicant owns and operates a closed loop wastewater recycling unit to reclaim washwater generated from steam cleaning of truck engines and other truck parts in Carlton, Oregon.

Application was made for tax credit for a Water Pollution Control Facility.

2. Description of Facility

The Kracher wastewater treatment system consists of three units: the settlement unit; the mixing unit; and, the filter unit. Wastewater first enters the settlement unit where coarse dirt settles out. Wastewater is then pumped into the mixing unit where a splitting agent is added to create a flock which binds dirt and oil. The flocks are separated in the filter unit, and filtered wastewater is pumped to a holding tank for reuse.

Claimed Facility Cost: \$ 22,110.38
Accountant's certification was provided.

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met statutory deadline in that installation of the facility was substantially completed on August 15, 1994; the application for certification was found to be complete on January 23, 1995, within 2 years of substantial completion of the facility.

4. Evaluation of Application

- a. The facility is eligible for a tax credit because the principal purpose of the facility is to reduce a substantial quantity of wastewater from discharging to Carlton's storm sewer. Prevention is accomplished by the cleaning and recycling of washwater. With the installation of this facility, no permit from the DEQ is necessary.

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

- 1) The facility does not recover or convert waste products into a salable or usable commodity.
- 2) The percent allocable determined by using this factor would be 100%.
- 3) Although no alternative methods for achieving the same pollution control objective were evaluated, the alternative selected is an acceptable pollution control approach available at a reasonable cost.
- 4) There are no related savings or increase in costs which occur, or may occur, as a result of the installation of the facility. The cost of maintaining and operating the facility is \$450.00 annually.
- 5) There are no other factors to consider in establishing the actual cost of the facility properly allocable to prevention, control, or reduction of pollution.
- 6) The actual cost of the facility properly allocable to pollution control as determined by using this factor is 100 %.

5. Summation

- a. The facility was constructed in accordance with all regulatory deadlines.
- b. The facility is eligible for tax credit certification in that the principal purpose of the facility is to comply with a requirement imposed by the Department, and the Federal Environmental Protection Agency to prevent water pollution.
- c. The portion of the facility cost that is properly allocable to pollution control is 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$22,110.00, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-4337.

Tom Fisher
(503) 378-8240, extension 236
March 13, 1995

State of Oregon
Department of Environmental Quality

RECLAIMED PLASTIC TAX CREDIT
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Ron Larvik, President
AKA City Garbage Service
1202 Willow Street
LaGrande, Oregon 97850

The applicant is the president of a garbage collection service collecting source separated recyclables from the curb and at a depot. The two 40 yard boxes will be used to store the collected plastics until sufficient to prepare for market.

Application was made for Reclaimed Plastic Tax Credit.

2. Description of Equipment, Machinery or Personal Property

Claimed Investment Cost: \$6,487.50 consisting of:

Two (2) 40 yard drop boxes
Four (4) Stellar Hooks
Eight (8) signs of lists of inclusions/exclusions
Two (2) Hooked plastic bottle signs

An invoice was provided.

3. Procedural Requirements

The investment is governed by ORS 468.925 through 468.965, and by OAR Chapter 340, Division 17.

The investment met all statutory deadlines in that:

- a. The request for preliminary certification was received on November, 21, 1994. The preliminary application was filed complete on November 23, 1994.
- b. The request for preliminary certification was approved on November 23, 1994, before the application for final certification was made.
- c. The investment was made on December 15, 1994, prior to June 30, 1995.

- d. The request for final certification was submitted on January 04, 1995 and was filed complete on February 21, 1995.

4. Evaluation of Application

- a. The investment is eligible because the equipment is necessary to process reclaimed plastic.
- b. Allocable Cost Findings

In determining the portion of the investment costs properly allocable to reclaiming and recycling plastic material, the following factors from ORS 468.960 have been considered and analyzed as indicated:

- 1) The extent to which the claimed collection, transportation, processing or manufacturing process is used to convert reclaimed plastic into a salable or usable commodity.

This factor is applicable because the sole purpose of this mold is to manufacture a reclaimed plastic product. The waste plastic used to manufacture this product is generated by persons other than the applicant.

- 2) The alternative methods, equipment and costs for achieving the same objective.

The applicant investigated other alternatives and determined that no other type of equipment can be used for storing depot plastics.

- 3) Any other factors which are relevant in establishing the portion of the actual cost of the investment properly allocable to the collection, transportation or processing of reclaimed plastic or to the manufacture of a reclaimed plastic product.

There are no other factors to consider in establishing the actual cost of the investment properly allocable to reclaiming and recycling plastic material.

The actual cost of the investment properly allocable to processing reclaimed plastic as determined by using these factors is 100%.

The actual cost of the investment properly allocable to processing reclaimed plastic as determined by using these factors is 100%.

5. Summation

- a. The investment was made in accordance with all regulatory deadlines.
- b. The investment is eligible for final tax credit certification in that the equipment is necessary to manufacture a reclaimed plastic product.
- c. The qualifying business complies with DEQ statutes and rules.
- d. The portion of the investment cost that is properly allocable to reclaiming and recycling plastic is 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Reclaimed Plastic Tax Credit Certificate bearing the cost of \$6,488.00 with 100 percent allocated to reclaiming plastic material, be issued for the investment claimed in Tax Credit Application No. TC-4342.

RAP:Rick Paul
wp51\tax\tc4342rr.sta
(503) 229-5934
March 14, 1995

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Portland Willamette, Byers Industries
Portland-Willamette Division of Byers Industries, Inc.
6800 NE 59th Place
Portland OR 97213

The applicant owns and operates a manufacturing facility for fireplace equipment in Portland, Oregon.

Application was made for tax credit for a water pollution control facility.

2. Description of Facility

Process wastewater discharge was reduced to zero by process redesign and the installation of new equipment in the following areas:

Electroplating Line: Added new rinse tanks for more efficient water usage, which allows for the reuse of rinse waters as plating solution tank make-up water. The remaining rinse water is evaporated at 180°F from the rinse tanks. Added steam-heated coils and converted an existing tank to serve as an overflow evaporation tank.

Mesh Painting Line: Added new rinse tanks and reconfigured Line tanks and piping for a 2-step counterflow rinsing process; added a filtration system for the zinc phosphate tank; reconfigured the Line to reduce bath/tank contamination due to drag out; added steam-heated coils and converted an existing tank to serve as an evaporation tank.

Powder Coating Line: Reconfigured rinsing tank overflow into a counterflow arrangement (rinse tanks supply make-up water to cleaning and phosphate coating tank); overflow from phosphate tank is evaporated in the Plating Line evaporator.

Claimed Facility Cost: \$101,328
(Accountant's Certification was provided).

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190 and by OAR Chapter 340, Division 16.

The facility met the statutory deadline in that installation of the facility was substantially completed in October 1993, and the application for certification was found to be complete in January 1995, within 2 years of substantial completion of the facility.

4. Evaluation of Application

- a. The facility is eligible because the sole purpose of the facility is to prevent a substantial quantity of water pollution. This prevention is accomplished by elimination of process wastewater discharge.

Notice of Noncompliance WQ-NWR-91-324 was issued to Portland Willamette (PW) on December 2, 1991. The NON was issued as a result of bioassay test results on PW's effluent. As a result of the NON and subsequent considerations, PW decided to go to zero discharge of wastewaters. The Department accepted PW's proposal on December 20, 1991.

A site inspection on March 3, 1992, indicated that PW was proceeding toward zero discharge by modifying their wastewater treatment system

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

- 1) The extent to which the facility is used to recover and convert waste products into a saleable or usable commodity.

A portion of the waste products are converted into a usable commodity consisting of chemicals which are cleaned and recycled in the plating process.

The net savings using the current system as compared with the previous wastewater treatment plant is \$10,300 annually.

- 2) The estimated annual percent return on the investment in the facility.

Given that the net savings using the current system as compared with the previous wastewater treatment plant is \$10,300 annually and the eligible cost of the facility is \$101,328, the return on investment

factor is 9.84. The facility has an estimated expected useful life of ten years. The cost allocation methodology for a facility constructed in 1993 using an investment factor of 9.84 results in the allocation of 95% of the facility's cost to pollution control.

- 3) The alternative methods, equipment and costs for achieving the same pollution control objective. Two alternatives were considered as responses to the December 2, 1991 NON. They were as follows:
 1. Do a wastewater characterization consisting of bioassays and water chemistry analyses. Based on the results of the characterization, the manufacturing process or the wastewater treatment process could be adjusted in order to meet permit limits. This option would have kept the on site wastewater treatment plant and continued operation under an NPDES permit.
 2. Change discharge points from the Columbia Slough to City of Portland sanitary sewers. This would have required the installation of a forced sewer line to a manhole about one mile from the site at a cost of several hundred thousand dollars.

Both of the above options were rejected due to the potential constraints and possibly threats to critical manufacturing processes.

- 4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

The savings in operating costs amount to \$10,300 annually. The percent allocable was calculated above.

- 5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to the prevention, control or reduction of air, water or noise pollution or solid or hazardous waste or to recycling or properly disposing of used oil.

There are no other factors to consider in establishing the actual cost of the facility properly allocable to prevention, control or reduction of pollution.

The actual cost of the facility properly allocable to pollution control as determined by using this factor is 95%.

5. Summation

a. The facility was constructed in accordance with all regulatory deadlines.

b. The facility is eligible for tax credit certification in that

the sole purpose of the facility is to prevent a substantial quantity of water pollution and accomplishes this purpose by the elimination of process wastewater discharge.

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 95%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$101,328 with 95% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-4345.

Elliot J. Zais
(503) 229-5292
March 13, 1995

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Consolidated Metco, Inc.
13940 N Rivergate Blvd
Portland, OR 97203

The applicant owns and operates an aluminum casting plant in Portland, Oregon.

Application was made for tax credit for a water pollution control facility.

2. Description of Facility

The facility is a natural gas fired Asendor Wastewater Evaporator, Serial No. 001/Model #WB60, rated at sixty gallons per hour. The unit is utilized to evaporate industrial wastewater which was previously discharged to the sanitary sewer or sent off site for treatment.

Claimed Facility Cost: \$19,500

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190 and by OAR Chapter 340, Division 16.

The facility met the statutory deadline in that installation of the facility was substantially completed in December, 1993 and the application for certification was found to be complete in January, 1995 within 2 years of substantial completion of the facility.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement by the City of Portland and the Department to reduce water pollution. The requirement is to comply with the effluent limitations of a waste discharge permit issued by the City of Portland to Consolidated Metco, Inc. This reduction is accomplished by the use of treatment works for industrial waste as defined in ORS 468B.005.

The Department has delegated the implementation of the pretreatment program to the City of Portland as required by its National Pollutant Discharge Elimination System (NPDES) Permit No. 100807. The permit requires the City of Portland to control significant industrial discharges to its sanitary sewer. Consolidated Metco, Inc. was issued Waste Discharge Permit No. 300-013 by the City of Portland for its wastewater discharge to the city sanitary sewer.

According to the Bureau of Environmental Services, City of Portland (BES), the facility has been in compliance with the requirements of the Waste Discharge Permit No. 300-013. Prior to the installation of the facility, approximately 1,800 gallons of wastewater a month was being discharged to the city sanitary sewer.

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

- 1) The extent to which the facility is used to recover and convert waste products into a saleable or usable commodity.

The facility does not recover or convert waste products into a salable or usable commodity.

- 2) The estimated annual percent return on the investment in the facility.

There is no return on investment for this equipment.

- 3) The alternative methods, equipment and costs for achieving the same pollution control objective.

Alternative methods evaluated were chemical treatment and ultrafiltration. Both processes were labor intensive and not cost effective on a minimal discharge as experienced from this process.

The cost of the chemical treatment is estimated at \$75,000 to \$100,000. The cost of the ultrafiltration system is estimated at \$90,000.

- 4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

There are no savings or increase in costs as a result of the facility modification. The cost of maintaining and operating the facility is \$26,312 annually.

- 5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to the prevention, control or reduction of air, water or noise pollution or solid or hazardous waste or to recycling or properly disposing of used oil.

There are no other factors to consider in establishing the actual cost of the facility properly allocable to prevention, control or reduction of pollution.

The actual cost of the facility properly allocable to pollution control as determined by using these factors is 100%.

5. Summation

- a. The facility was constructed in accordance with all regulatory deadlines.
- b. The facility is eligible for tax credit certification in that the sole purpose of the facility is to comply with a requirement imposed by the City of Portland and the Department to prevent a substantial quantity of water pollution and accomplishes this purpose by the use of treatment works for industrial waste as defined in ORS 468B.005.
- c. The facility complies with the permit conditions of the Waste Discharge Permit No. 300-013 issued by the City of Portland, Bureau of Environmental Services.
- d. The portion of the facility cost that is properly allocable to pollution control is 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$19,500 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-4346.

Elliot J. Zais
(503) 229-5292
March 13, 1995

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Kelly Farms, Inc.
22111 River Road NE
St. Paul, Oregon 97137

The applicant owns and operates a grass seed farm operation in Marion County, Oregon.

Application was made for tax credit for an air pollution control facility.

2. Description of Claimed Facility

The facility described in this application is a 162' x 74' x 27' steel structure, straw storage shed, located at 21981 River Road NE, St. Paul, Oregon. The land and the buildings are owned by the applicant.

Claimed facility cost: \$78,865.05
(Accountant's Certification was provided.)

3. Description of Farm Operation Plan to Reduce Open Field Burning.

The applicant has 550 acres of perennial grass seed under cultivation. In recent years, the applicant has dramatically reduced the number of acres open field burned by trading the straw to a custom baler for the removal of the straw from the fields.

However, the applicant found that without adequate storage space available to protect the straw from inclement weather a great deal of water damaged straw had to be stack burned each year. Further, the custom baler was inclined to service growers with storage facilities before servicing growers without storage facilities. The storage facility addressed by this application serves to maintain the open field burning reduction and promotes the abatement of stack burning.

4. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16. The facility has met all statutory deadlines in that:

Construction of the facility was substantially completed on March 1, 1994. The application for final certification was found to be complete on February 8, 1995. The application was filed within two years of substantial completion of the facility.

5. Evaluation of Application

- a. The facility is eligible under ORS 468.150 because the facility is an approved alternative method for field sanitation and straw utilization and disposal that reduces a substantial quantity of air pollution. This reduction is accomplished by reduction of air contaminants, defined in ORS 468A.005; by reducing the maximum acreage to be open burned in the Willamette Valley as required in OAR 340-26-013; and, the facility's qualification as a "pollution control facility", defined in OAR 340-16-025(2)(f) A): "Equipment, facilities, and land for gathering, densifying, processing, handling, storing, transporting and incorporating grass straw or straw based products which will result in reduction of open field burning."

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1. The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The facility promotes the conversion of a waste product (straw) into a salable commodity by providing protection from inclement weather.

2. The estimated annual percent return on the investment in the facility.

There is no annual percent return on the investment as applicant claims no gross annual income.

3. The alternative methods, equipment and costs for achieving the same pollution control objective.

The method chosen is an accepted method for reduction of air pollution. The method is one of the least costly, most effective methods of reducing air pollution.

4. Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

There is an increase in operating costs of \$2,575 to annually maintain and operate the facility. These costs were considered in the return on investment calculation.

5. Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to the prevention, control or reduction of air pollution.

There are no other factors to consider in establishing the actual cost of the facility properly allocable to prevention, control or reduction of air pollution.

The actual cost of the facility properly allocable to pollution control as determined by using these factors is 100%.

6. Summation

- a. The facility was constructed in accordance with all regulatory deadlines.
- b. The facility is eligible under ORS 468.150 as an approved alternative method for field sanitation and straw utilization and disposal that reduces a substantial quantity of air pollution as defined in ORS 468A.005
- c. The facility complies with DEQ statutes and rules.
- d. The portion of the facility that is properly allocable to pollution control is 100%.

7. The Department of Agriculture's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$78,865.00, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-4351.

Jim Britton, Manager
Smoke Management Program
Natural Resources Division
Oregon Department of Agriculture
(503) 378-6792
FAX: (503) 378-2590

JB:bk4351
March 7, 1995

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Ore-Ida Foods, Inc.
Ontario Factory
Subsidiary of the H.J. Heinz Company
P. O. Box 10
Boise, Idaho 83707

The applicant owns and operates a vegetable processing facility in Ontario, Oregon.

Application was made for tax credit for a water pollution control facility.

2. Description of Facility

The applicant has completed a three phase upgrade to and replacement of their wastewater treatment system.

The upgrades to the facility include:

- Replacement of the influent and effluent flow measurement structures and systems;
- Replacement of the primary clarifiers;
- Addition of belt filter presses;
- Addition of a primary scum pumping system and installation of secondary clarifier skimming and scum pumping.
- Addition of a new activated biofilter (ABF) tower and replacement of the media in the existing ABF tower;
- Construction of a new laboratory and control building;
- Installation of a filament control chlorination system;
- Addition of raw influent screening and a solids storage hopper enclosure; and,
- Installation of a new selector channel and aeration basins. This installation included new blowers, a blower building and a fine bubble diffuser aeration system.

Claimed Facility Cost: \$11,195,788. The accountant's certification was provided by Coopers & Lybrand on October 10, 1994. In arriving at the claimed facility cost the applicant subtracted the estimated like-for-like replacement costs of facilities previously

certified under tax credits 486, 1182, 1387 and 1877. The replacement costs for these facilities was estimated to be \$648,717.00. At the Department's request the firm selected to perform the external accounting review evaluated these estimated replacement costs and determined that they are appropriate.

Eligible Costs

The Department determined initially that the costs submitted by the applicant were eligible except for the chlorination pole building, the Versatile 276 tractor, Knight Slinger Spreader #30283, the defrost clarifier tank, twenty five (25)% of the Ford dump truck (for which a percentage of its use is for a purpose other than pollution control), a fire protection system (not for the protection of the pollution control facility) and the lab office building. Additional costs, which were identified and determined to be ineligible as the result of a review by the external accountants, include: the replacement cost for plastic media and other replacement costs for ABF #1, concrete between the buildings, spare parts, a gas line to the maintenance shop, hoists and cranes, fire protection assets not related to the pollution control facility and resurfaced epoxy floor covering. The Department determined these items to be ineligible because they do not contribute significantly to controlling pollution at the site.

Claimed Facility Cost:		\$11,195,788.00
Pole building	12,462.00	
276 Versatile tractor	39,000.00	
Slinger spreader	14,900.00	
Lab office	2,018.00	
Fire system	21,500.00	
Defrost clarifier	23,625.00	
Ford dump truck (25%)	14,184.00	
ABF media replacement	239,801.00	
Misc. ABF replacement	51,846.00	
Concrete between blds.	7,660.00	
Spare parts	9,169.00	
Gas line	6,336.00	
Hoist & Cranes	5,280.00	
Fire system asset #86698	2,715.00	
Epoxy floor covering	<u>28,306.00</u>	
Total		<u>478,802.00</u>
Eligible Facility Cost:		\$10,716,986.00

3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190 and by OAR Chapter 340, Division 16. The facility met the statutory deadline in that construction of the facility was substantially completed on June 16, 1993, and the application for certification was found to be complete on December 5, 1994, within 2 years of substantial completion of the facility.

4. Evaluation of Application

- a. The sole purpose of the facility is to control and reduce a substantial quantity of water pollution. This control and reduction is accomplished by the redesign of the treatment works for industrial waste as defined in ORS 468B.005.

Since installation of the improvements, the facility has been operating in compliance with the discharge limits contained in their National Pollutant Discharge Elimination System permit.

- b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed:

- 1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The facility recovers costs from cattle feed sales. However, the cattle feed income will end in March 1995. The total income generated by the facility for the fiscal year ending April 30, 1994 was \$80,363. This income is offset by an annual average operating cost of \$1,013,998.

- 2) The estimated annual percent return on the investment in the facility.

The revenue generated from this facility is more than offset by the operating expenses; therefore, there is no return on investment.

- 3) The alternative methods, equipment and costs for achieving the same pollution control objective.

Several alternatives were considered for the upgrade to the wastewater treatment plant. Factors used in selecting the final alternatives included:

the capability to meet National Pollutant Discharge Elimination System (NPDES) permit limits, a proven track record for the treatment of potato wastewater, ease of operation, mechanical reliability, capital and maintenance costs, environmental impacts and experience with past operating practices.

An analysis of sludge dewatering systems was performed comparing centrifuge and belt-filter press approaches for sludge dewatering. The analysis estimated the costs for the two approaches on a per-dry-ton of sludge basis. Over a five year period, the costs were determined to be \$ 93.31 /dry ton for the centrifuge systems and \$78.14 for the belt-filter press systems. The belt-filter press approach was selected.

Prior to implementation of Phase II and III improvements, the following major problems were identified at the wastewater treatment plant:

- Inadequate aeration for current and future biochemical oxygen demand (BOD);
- The existing ABF tower was overloaded and the media in the tower was progressively failing;
- Inadequate sludge removal capability;
- The asphalt liners in the existing aeration basins were badly deteriorating; and,
- The existing recirculation pump station had limited capacity and could not provide recommended media wetting rates for new media.

Further analysis evaluated alternatives ranging from replacing minimal portions of the treatment process to installation of new elements and replacement of inadequate elements of the wastewater treatment plant. The analysis also compared the cost of shutting down the factory while completing modifications to phasing in the modifications while the factory continued to operate.

A total of ten options were evaluated. Five of the option alternatives were eliminated because the alternatives would not solve all the problems associated with the facility. The five remaining alternatives which would solve all the problems associated with the facility ranged in cost from an estimated 10 to 11.5 million dollars. The alternative selected was chosen because it addressed all problems associated with the facility, was cost effective and would allow installation of improvements without curtailment of the factory production schedule.

- 4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

There are no savings from the facility. The average net cost of maintaining and operating the facility is estimated at approximately \$1,000,000 annually.

- 5) Any other factors that are relevant in establishing the portion of the actual cost of the facility properly allocable to the prevention, control or reduction of air, water or noise pollution or solid or hazardous waste or to recycling or properly disposing of used oil.

The Department initially determined that the chlorination pole building, the Versatile 276 tractor, Knight Slinger Spreader #30283, the defrost clarifier tank, twenty five (25)% of a Ford dump truck, the fire system and the lab office building were not eligible costs. The external accounting review performed by the firm of Symonds, Evans and Larson identified additional items that were also determined to be ineligible and which included: the replacement cost for plastic media and other replacement costs for ABF Tower #1, concrete between the buildings, spare parts, a gas line to the maintenance shop, hoists and cranes, certain fire protection system assets not related to the pollution control facility and resurfaced epoxy floor covering. Total ineligible costs amounting to \$478,802.00 were subtracted from the Claimed Facility Cost to determine the Eligible Facility Cost.

The actual cost of the facility properly allocable to pollution control is \$10,716,986.00.

5. Summation

- a. The facility was constructed in accordance with all regulatory deadlines.
- b. The facility is eligible for tax credit certification in that the sole purpose of the facility is to control and reduce a substantial quantity of water pollution and accomplishes this purpose by the redesign of the wastewater treatment system to eliminate industrial waste as defined in ORS 468B.005.
- c. The facility complies with DEQ statutes and rules, and permit conditions.
- d. The portion of the eligible facility cost that is properly allocable to pollution control is 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the eligible facility of \$10,716,986.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-4308.

John Straughan:jrs
(503) 278-4608
March 6, 1995

SYMONDS, EVANS & LARSON
CERTIFIED PUBLIC ACCOUNTANTS

Environmental Quality Commission
811 S.W. Sixth Avenue
Portland, Oregon 97204

At your request, we have performed certain agreed-upon procedures with respect to Ore-Ida Foods, Inc.'s (the Company's) Pollution Control Tax Credit Application No. T-4308 (the Application) filed with the State of Oregon, Department of Environmental Quality (the DEQ) for the Water Pollution Control Facility in Ontario, Oregon (the Facility). The Application has a claimed Facility cost of \$11,195,788. Our procedures, findings and conclusion are as follows:

Procedures:

1. We read the Application, the Oregon Revised Statutes on Pollution Control Facilities Tax Credits – Sections 468.150 through 468.190 (the Statutes), and the Oregon Administrative Rules on Pollution Control Tax Credits – Sections 340-16-005 through 340-16-050 (OAR's).
2. We inspected vendor invoices which aggregated approximately 87% of the claimed Facility cost.
3. We read certain other documents which support the claimed cost of the Facility, including the following:
 - A. The Company's previous Pollution Control Tax Application Nos. T-1823, T-1383, T-1289 and T-543.
 - B. The Company's fixed asset retirement records from May 1990 through April 1993.
 - C. Selected correspondence letters between the DEQ, the Company and CH2M HILL from 1992 through 1994.
4. We discussed the Application, the Statutes and OAR's with John Straughan and Rene Dulay of the DEQ and Charles Bianchi, a contractor for the DEQ.
5. We discussed certain components of the Application with various Company personnel, including Deborah Simcox, John Brown, Mike Moon, Carl Krueger and John Schram.
6. We toured the Facility with Company personnel.

SYMONDS, EVANS & LARSON
CERTIFIED PUBLIC ACCOUNTANTS

7. We verified on a test basis that the Company appropriately excluded from the Application \$648,719 in "like-for-like" replacement costs in accordance with the Oregon Revised Statutes on Pollution Control Facilities Tax Credits – Section 468.155(2)(e)(A).
8. We requested that Company personnel confirm the following:
 - A. There were no related parties or affiliates of the Company which had billings which were included in the Application.
 - B. The capacity of the Facility is adequate for the Company's present operations and does not include significant capacity for potential future operations.
 - C. All supply costs included in the Application related to the installation of the Facility and did not include ongoing operating supplies.
 - D. All internal labor costs included in the Application related directly to the installation of the Facility, were not related to maintenance and repairs, and were at actual cost.
 - E. The heating and ventilation costs incurred related to the laboratory at the Facility are necessary to maintain computer equipment at an acceptable temperature level.
 - F. The 143 acres of land with a cost of \$275,000 which was included in a Pollution Control Facility Tax Certificate issued to the Company in 1980, was not a "like-for-like" replacement cost deducted from the Application, because the Company believes such property is required to maintain a back-up disposal site for the waste generated by the Facility. The Company has no plans to utilize this property for any purpose other than pollution control, or sell the property during the 20 year estimated life of the Facility without justifiable cause directly related to a change in the Facility or DEQ regulations. In addition, the Company has not deducted the "like-for-like" original cost of a \$93,768 centrifuge and a \$13,506 polymer feed system which were included in previous Pollution Control Facility Tax Certificates issued to the Company, because the Company believes such equipment is required to maintain back-up processing for the waste generated by the Facility.
 - G. There was no salvage value related to equipment or structures that were removed during the construction of the Facility for which the Company previously received pollution control tax credits and for which the Company did not deduct the items from the Facility costs as "like-for-like" replacements in accordance with the Oregon Revised Statutes on Pollution Control Facilities Tax Credits – Section 468.155(2)(e)(A).
 - H. The costs included in the Application for insulating the buildings utilized in the Facility were necessary to ensure a continuous water flow during periods of cold weather.

SYMONDS, EVANS & LARSON
CERTIFIED PUBLIC ACCOUNTANTS

Findings:

1. through 7.

No matters came to our attention that caused us to believe that the Application should be adjusted, except for the following:

Non-allowable costs identified by the DEQ

Pole building for chlorinator	\$ 12,462
276 Versatile tractor	39,000
Slinger spreader	14,900
Laboratory office	2,018
Fire system included in asset #86659	21,500
Defrost clarifier	23,625
Ford dump truck	<u>14,184</u>
	127,689

Non-allowable costs identified by Symonds, Evans & Larson

Replacement costs of plastic media in ABF Tower #1	239,801
Other replacement costs in ABF Tower #1	51,846
Concrete between buildings	7,660
Spare parts (fuses, pumps, belts, etc.)	9,169
Gas line to maintenance shop	6,336
Hoists and cranes	5,280
Fire protection sprinklers included in asset #86698	2,715
Resurfaced epoxy floor covering	<u>28,306</u>
	<u>351,113</u>
Total non-allowable costs	<u>\$ 478,802</u>

As a result, the allowable costs for the Application should be reduced to \$10,716,986.

8. Company personnel confirmed in writing that such assertions were true and correct.

Conclusion:

Because the above procedures do not constitute an audit conducted in accordance with generally accepted auditing standards, we do not express an opinion on any of the items referred to above. In connection with the procedures referred to above, no matters came to our attention that caused us to believe that the specified items should be adjusted, except as noted above. Had we performed additional procedures or had we conducted an audit of the financial statements of the

SYMONDS, EVANS & LARSON
CERTIFIED PUBLIC ACCOUNTANTS

Company in accordance with generally accepted auditing standards, other matters might have come to our attention that would have been reported to you. This report relates only to the items specified above and does not extend to any financial statements of the Company, taken as a whole.

This report is solely for the use of the State of Oregon Environmental Quality Commission and Department of Environmental Quality in evaluating the Company's Pollution Control Tax Credit Application No. T-4308 with respect to its Water Pollution Control Facility in Ontario, Oregon and should not be used for any other purpose.

Symonds, Evans & Larson

February 27, 1995



P.O. Box 275
Springfield, Oregon 97477
Tel (503) 746 2511
Fax (503) 741 5240

February 28, 1995

Charles Bianchi
Oregon Department of Environmental Quality
811 S.W. 6th Avenue
Portland, Oregon 97204-1390

Dear Mr. Bianchi:

Our pollution tax credit application for two separate projects related to the common goal of Continuous Emission Monitoring (CEMs) will be hand-delivered to your office tomorrow, Wednesday, March 1. The applications should be complete with respect to your requirements, and based on several teleconference calls with Brian Fields, except for an auditor's report addendum discussed below. In case the ODEQ feels that additional information is needed, we would like to formally request an extension of the application deadline beyond March 1, 1995, pursuant to OAR 340-16-020(1C). Some of the equipment started up in March 1993, so the formal deadline for the tax credit application is March 1, 1995. We also formally request that ODEQ forward our request for extension to the EQC for approval.

With respect to CEMs, two tax credit applications will be submitted March 1, 1995, as summarized below. The logical grouping of the projects below was based on suggestions from ODEQ. The equipment started up between March 1993 and August 1994. Elements of the first project started up in March 1993. To play it conservatively with respect to the two-year-from-project-completion deadline, we are treating the March 1, 1995, deadline as applicable to both projects. Therefore, **we request an extension for up to six months to September 1, 1995.**

- 1) Kiln Stack
 - a) Kiln CO and
 - b) Kiln Stack Extension (meet EPA sampling requirements for RS/SO₂/Opacity/CO)

- 2) Boiler/Kiln STI CEMs, MIS, CEM Q/A
 - a) No. 3/4 Recovery Graseby/STI TRS/SO₂/O₂ CEM
 - b) Kiln Graseby/STI TRS/SO₂/O₂ CEM
 - c) Package Boiler NO_x/O₂ CEM
 - d) CEM RATA Audit
 - e) CEM QA Manual
 - f) Recovery Main Stack Opacity
 - g) Mill Information System (MIS) CEM data reporting software

Due to circumstances beyond the control of the applicant (Weyerhaeuser Company), it has taken the full two years to complete this application. We contracted with CH²M Hill in the summer of

Charles Bianchi
Oregon Department of Environmental Quality
February 28, 1995

Page 2

1994 to complete the application forms. Due to consultant staff turnover, we had to start over with a new team at CH²M Hill in the fall of 1994. Recently our lead economist at CH2MHill (Toby LaFrance) was ill, which compounded the delay. Extending the deadline will give us time to respond to any ODEQ requests for additional information should they arise after the March 1, 1995, deadline.

The auditor's report was received last week. Due to a communication error on the part of CH²M Hill, the auditor's report included only 92% of the total amount of the projects. Three elements of Project #2 (Boiler/Kiln CEMs, etc.) were not included. Omissions included the Package Boiler NOx/O₂, CEM RATA Audit, and the CEM QA Manual. These were missed because they were separately accounted for from the other items and CH²M Hill miscommunicated that information to the auditor. Also, our auditor included the Recovery Main Stack Opacity Monitor in a project referred to as ESP Outlet Opacity Monitoring, instead of Project #2 as suggested by ODEQ. Our economic analysis determined that due to economic benefit associated with the ESP Outlet Opacity Monitoring, the ESP Opacity Monitoring would not qualify for a tax credit, so it will not be included in the application. The economic benefit was not related to the Recovery Stack Opacity Monitor. We will include start-up notices on the omitted items in our application submissions on March 1, 1995, to document them for the ODEQ. A supplemental auditor's report will be filed soon to correct the above auditor omissions and sorting on the Recovery Main Stack Opacity. The application fees will reflect the total project cost including the omitted items.

For your information, the application fee amounts were based on the following calculations:

- 1) $\$50 + (89,121 * 0.005) = \495.61
- 2) $\$50 + (634,324 * 0.005) = \$3,221.62$

If you have any questions on this matter, please direct them to me at 503-741-5706, or fax 741-5240. Thank you for your attention to this matter. We appreciate the opportunity to participate in the pollution tax credit program.

Sincerely,



Russell J. Ayers
Mill Projects Manager

RJA/sk

Environmental Quality Commission

- Rule Adoption Item
 Action Item
 Information Item

Agenda Item C
April 14, 1995 Meeting

Title:

Temporary Rule: Changing Effective Date for Provision of Financial Assurance for Solid Waste Landfills.

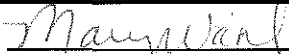
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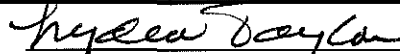
On March 31, 1995, EPA amended the financial assurance rules for municipal solid waste landfills to grant a two year delay in the financial assurance requirements for closure and post-closure care of solid waste landfills. Because the federal Subtitle D landfill requirements were adopted by reference in Oregon, the Department believes that the State should adopt the new federal date for consistency with federal requirements and to provide landfill permittees greater time to develop or acquire sufficient financial assurance. The department's proposal will impact both municipal and non-municipal landfills equally.

Department Recommendation:

It is recommended that the Commission adopt temporary rules modifying OAR 340-94-140 and 340-95-090, delaying the effective date of financial assurance requirements to April 9, 1997. The complete text of the proposed rule modifications is presented in Attachment A, together with supporting findings presented in Attachment B.


Report Author


Division Administrator


Director

April 4, 1995

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

State of Oregon
Department of Environmental Quality

Memorandum[†]

Date: March 29, 1995

To: Environmental Quality Commission
From: Lydia Taylor, Interim Director *Lydia Taylor*
Subject: Agenda Item C, April 14, 1995, EQC Meeting

Temporary Rule: Changing Effective Date for Provision of Financial Assurance
for Solid Waste Landfills

Statement of the Issue

On March 31, 1995, the US Environmental Protection Agency (EPA) adopted a final rule delaying from April 9, 1995 to April 9, 1997 the date for solid waste landfills to meet financial assurance requirements. EPA did this in part because it has not yet adopted either the local government or corporate financial tests, thus making this expected method of financial assurance unavailable. The Environmental Quality Commission has previously adopted the federal Subtitle D landfill requirements by reference. The Department believes that the State should adopt the new federal date for financial assurance, for the same reasons that EPA delayed the federal requirement date two years. Adopting the 1997 effective date will also give landfill permittees greater time to develop or acquire sufficient financial assurance, thus providing some relief from regulatory burden.

Background

When a landfill cell has reached its capacity, it must be closed in such a manner that the solid waste in the cell will not contaminate the groundwater, produce high levels of methane gas that escapes from the cell, or otherwise damage the environment. In addition, the landfill must be monitored for at least 30 years after closure to maintain the site and assure that contaminants do not escape the landfill and cause contamination. The costs of closure and maintenance of the site after closure can be high, so it is in the best interest of the State to assure that landfill permittees have sufficient financial resources available to guarantee proper closure of the site.

On April 22, 1994, the EQC adopted permanent rules with what was then the federal effective date of April 9, 1995 for provision of financial assurance for most municipal solid waste landfills and for all non-municipal solid waste landfills. Very small municipal landfills had an effective date of October 9, 1995 for providing financial assurance.

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

EPA issued a proposed rule on October 18, 1994 to grant a one-year delay in the effective date for financial assurance for closure and post-closure care. EPA received comments on this proposed rule requesting that the deadline for financial assurance be extended even longer than a year. Based on these comments, on March 31 of this year EPA adopted a two-year delay as the effective date in their final rule. The adopted effective date is April 9, 1997 for all municipal solid waste landfills.

Authority to Address the Issue

ORS 459.045, 459.209, 459.270, 459.272, and 468.020. Oregon has also received "approved state" designation from EPA, and thus may implement the requirements of the Resource Conservation and Recovery Act Subtitle D for municipal solid waste landfills.

Alternatives and Evaluation

1. Adopt the temporary rules as proposed, and follow up with a permanent rule adoption within six months.
2. Adopt the federal effective date only for municipal landfills, but keep the April 9, 1995 date for non-municipal landfills.

Non-municipal solid waste land disposal sites are not subject to federal regulation, and thus a change in the effective date for the municipal landfills covered under the federal regulation would not in itself provide a reason for changing the date for the non-municipal sites. However, the Department believes that the effective date should be the same for both types of sites. Oregon law generally treats municipal and non-municipal landfills the same for financial assurance requirements, and the Department has no reason to treat the non-municipal sites more stringently than the municipal ones.

3. Do not adopt temporary rules. Instead, practice "enforcement discretion" by not enforcing the financial assurance requirements until permanent rules are adopted.

Proceeding in this manner would allow this rulemaking to be combined with other future rulemaking expected, such as adoption of financial assurance tests. However, the Department believes that this option would lead to confusion on the part of landfill permittees, since the Department would not be following the effective date in its own rules.

Summary of Any Prior Public Input Opportunity

Due to the quick time frame required to adopt EPA's delay of the effective date, the Department has not had the opportunity to review this proposal with the Solid Waste Advisory Committee or to seek significant input from persons outside the Department. An announcement of the proposed rule change was mailed to all owners, operators, and permittees of active solid waste landfills within a week of the date that EPA adopted the final rule changing the effective date for financial assurance requirements.

Conclusions

- o On March 31, 1995, EPA adopted new rules changing the effective date by which municipal landfills must provide assurance that sufficient funds will be available for landfill closure, post-closure, and corrective action activities when the landfill closes. The effective date was changed from April 9, 1995, to April 9, 1997.
- o By adopting the new Federal effective date, Oregon would allow municipalities to potentially make use of alternative financial assurance mechanisms expected to be adopted shortly by EPA, and would also reduce regulatory burden on all solid waste permittees by allowing more time for them to develop or acquire adequate financial assurance.
- o DEQ proposes that the same effective date also apply to non-municipal landfills that are not regulated under the federal financial assurance requirements. Doing so would make regulation of municipal and non-municipal landfills the same.

Proposed Findings

1. Failure to promptly adopt this temporary rule will result in serious prejudice to the public interest.
2. If the temporary rule is not adopted, owners, operators, and permittees of solid waste landfills will be required to develop or obtain financial assurance before rulemaking has been completed on alternative financial tests that can be used to demonstrate financial assurance.

The complete text of findings is included in Attachment B.

Memo To: Environmental Quality Commission
Agenda Item C
April 14, 1995 Meeting
Page 4

Recommendation for Commission Action

It is recommended that the Commission adopt temporary rules modifying OAR 340-94-140 and 340-95-090, delaying the effective date of financial assurance requirements to April 9, 1997. The complete text of the proposed rule modifications is presented in Attachment A, together with the supporting findings presented in Attachment B.

Attachments

- A. Text of Proposed Temporary Rule Modifications
- B. Supporting Findings

Reference Documents (available upon request)

- 1. Oregon Revised Statutes Chapter 459
- 2. OAR Divisions 94, 95.
- 3. Proposed Federal rule published in 59 FR 52498 to 52501

Approved:

Section:

Patricia Verner

Division:

Mary Ward

Report Prepared By: Peter Spendelow

Phone: (503) 229-5253

Date Prepared: April 4, 1995

phs
E:\FINA\FADATE.D53
April 4, 1995

ATTACHMENT A

Proposed Rule Modification

Note. The only changes proposed here are changes to the dates in 340-94-140 (3)(a)(B-D) (on page A-2) and 340 95-090 (3)(a)(B) (on page A-6). However, rule adoption requirements are that the entire text of a rule to be modified must be displayed.

~~Redlining~~ indicates proposed additions.

~~[Strikeout and brackets]~~ indicates proposed deletions.

PROPOSED AMENDMENT TO OAR 340-94-140

340-94-140 [Renumbered from 340-61-034]

If a municipal solid waste landfill is subject to 40 CFR, Part 258 as provided in 40 CFR, §258.1, the owner or operator shall comply with financial assurance criteria in 40 CFR, Part 258, Subpart G. All municipal solid waste permittees shall also comply with this rule.

- (1) **Financial Assurance Required.** The owner or operator of a municipal solid waste landfill shall maintain a financial assurance plan with detailed written cost estimates of the amount of financial assurance that is necessary and shall provide evidence of financial assurance for the costs of:
 - (a) Closure of the municipal solid waste landfill;
 - (b) Post-closure maintenance of the municipal solid waste landfill; and
 - (c) Any corrective action required by the Department to be taken at the municipal solid waste landfill, pursuant to OAR 340-94-080(3).
- (2) **Exemptions.** The Department may exempt from the financial assurance requirements existing municipal solid waste landfills which stopped receiving waste before October 9, 1993 (or which stopped receiving waste before April 9, 1994, if a "small landfill" meeting criteria in 40 CFR, §258.1(e)(2)), and completed installation of final cover by October 9, 1994. The Department may also exempt from the financial assurance requirements an existing "very small landfill serving certain small communities" meeting criteria in 40 CFR, §258.1(f)(1), if such a landfill stops receiving waste before October 9, 1995 and completes installation of final cover by October 9, 1996.
 - (a) **Exemption criteria.** To be eligible for this exemption, the applicant shall demonstrate to the satisfaction of the Department that the site meets all of the following criteria and that the site is likely to continue to meet all of these criteria until the site is closed in a manner approved by the Department:
 - (A) The landfill poses no significant threat of adverse impact on groundwater or surface water;
 - (B) The landfill poses no significant threat of adverse impact on public health or safety;
 - (C) No system requiring active operation and maintenance is necessary for controlling or stopping discharges to the environment;
 - (D) The area of the landfill that has been used for waste disposal and has not yet been properly closed in a manner acceptable to the Department is less than and remains less than two acres or complies with a closure schedule approved by the Department.
 - (b) In determining if the applicant has demonstrated that a site meets the financial assurance exemption criteria, the Department will consider existing available information including, but not limited to, geology, soils, hydrology, waste type and volume, proximity to and uses of adjacent properties, history of site operation and construction, previous compliance inspection reports, existing monitoring data, the proposed method of closure and the information submitted by the applicant. The Department may request additional information if needed.
 - (c) An exemption from the financial assurance requirement granted by the Department will remain valid only so long as the site continues to meet the exemption criteria in subsection (2)(a) of this rule. If the site fails to continue to meet the exemption criteria, the Department may modify the closure permit to require financial assurance. [Renumbered from 340-94-100 (3)-(5)]
- (3) **Schedule for provision of financial assurance.**

- (a) For costs associated with the "worst-case" closure plan and the "Subtitle D" post-closure plan prepared pursuant to 40 CFR Subparts F and G and OAR 340-94-110(1)(a)(A) and OAR 340-94-115(1)(a), respectively: Evidence of the required financial assurance for closure and post-closure maintenance of the landfill shall be provided on the following schedule:
- (A) For a new municipal solid waste landfill: no later than the time the solid waste permit is issued by the Department and prior to first receiving waste;
 - (B) For a regional disposal site operating under a solid waste permit on November 4, 1993: by May 4, 1994; ☒
 - (C) For other municipal solid waste landfills operating under a solid waste permit on November 4, 1993: by April 9, 1995, ~~1997~~; or
 - ~~(D) For a "very small landfill serving certain small communities" meeting criteria in 40 CFR, §258.1(f)(1) and operating under a solid waste permit on November 4, 1993: by October 9, 1995.~~
- (b) For costs associated with the Final Engineered Site Closure Plan and the Final Engineered Post-closure Plan prepared pursuant to OAR 340-94-110(1)(a)(B) and OAR 340-94-115(1)(b) respectively: Evidence of the required financial assurance for closure and post-closure maintenance of the landfill shall be provided at the same time those two Plans are due to the Department.
- (c) Evidence of financial assurance for corrective action shall be provided before beginning corrective action.
- (d) Continuous financial assurance shall be maintained for the facility until the permittee or other person owning or controlling the site is no longer required to demonstrate financial responsibility for closure, post-closure care or corrective action (if required).
- (4) Financial assurance plans. The financial assurance plan is a vehicle for determining the amount of financial assurance necessary and demonstrating that financial assurance is being provided. A financial assurance plan shall include but not be limited to the following, as applicable:
- (a) Cost Estimates. A detailed written estimate of the third-party costs in current dollars (as calculated using a discount rate equal to the current yield of a 5-year U.S. Treasury Note as published in the Federal Reserve's H.15 (519) Selected Interest Rates for the week in which the calculation is done) of:
 - (A) Closing the municipal solid waste landfill;
 - (B) Providing post-closure care, including installing, operating and maintaining any environmental control system required on the landfill site;
 - (C) Performing required corrective action activities; and
 - (D) Complying with any other requirement the Department may impose as a condition of issuing a closure permit, closing the site, maintaining a closed facility, or implementing corrective action.
 - (b) The source of the cost estimates;
 - (c) A detailed description of the form of the financial assurance and a copy of the financial assurance mechanism;
 - (d) A method and schedule for providing for or accumulating any required amount of funds which may be necessary to meet the financial assurance requirement;
 - (e) A proposal with provisions satisfactory to the Department for disposing of any excess moneys received or interest earned on moneys received for financial assurance, if applicable.
 - (A) To the extent practicable and to the extent allowed by any franchise agreement, the applicant's provisions for disposing of the excess moneys received or interest earned on moneys shall provide for:
 - (i) A reduction of the rates a person within the area served by the municipal solid waste landfill is charged for solid waste collection service as defined by ORS 459.005; or
 - (ii) Enhancing present or future solid waste disposal facilities within the area from which the excess moneys were received.
 - (B) If the municipal solid waste landfill is owned and operated by a private entity not regulated by a unit of local government, excess moneys and interest remaining in any financial assurance reserve shall be released to that

business entity after post-closure care has been completed and the permittee is released from permit requirements by the Department.

- (f) Adequate accounting procedures to insure that the permittee does not collect or set aside funds in excess of the amount specified in the financial assurance plan or any updates thereto or use the funds for any purpose other than required by paragraph (8)(a) of this rule; [Renumbered from 340-94-140(6)(b)]
 - (g) The certification required by subsection (6)(c) of this rule; and
 - (h) The annual updates required by subsection (6)(d) of this rule.
- (5) Amount of Financial Assurance Required. The amount of financial assurance required shall be established as follows:
- (a) Closure. Detailed cost estimates for closure shall be based on the "worst-case" closure plan or the Final Engineered Site Closure Plan, as applicable. Cost estimates for the Final Engineered Site Closure Plan shall take into consideration at least the following:
 - (A) Amount and type of solid waste deposited in the site;
 - (B) Amount and type of buffer from adjacent land and from drinking water sources;
 - (C) Amount, type, availability and cost of required cover;
 - (D) Seeding, grading, erosion control and surface water diversion required;
 - (E) Planned future use of the disposal site property;
 - (F) The portion of the site property closed before final closure of the entire site; and
 - (G) Any other conditions imposed on the permit relating to closure of the site.
 - (b) Post-closure care. Detailed cost estimates for post-closure care shall be based on the "Subtitle D" post-closure plan or the Final Engineered Post-closure Plan, as applicable. Cost estimates for the Final Engineered Post-closure Plan shall also take into consideration at least the following:
 - (A) Type, duration of use, initial cost and maintenance cost of any active system necessary for controlling or stopping discharges; and
 - (B) Any other conditions imposed on the permit relating to post-closure care of the site.
 - (c) Corrective action. Estimated total costs of required corrective action activities for the entire corrective action period, as described in a corrective action report pursuant to requirements of OAR 340-94-080(3) and 40 CFR §258.73.
 - (d) If a permittee is responsible for providing financial assurance for closure, post-closure care and/or corrective action activities at more than one municipal solid waste landfill, the amount of financial assurance required is equal to the sum of all cost estimates for each activity at each facility.
- (6) How Financial Assurance Is to Be Provided and Updated.
- (a) The permittee shall submit to the Department a copy of the first financial assurance mechanism prepared in association with a "worst-case" closure plan, a Final Engineered Site Closure Plan, a "Subtitle D" post-closure plan, a Final Engineered Post-closure Plan, and a corrective action report.
 - (b) The permittee shall also place a copy of the applicable financial assurance plan(s) in the facility operating record on the schedule specified in section (3) of this rule.
 - (c) The permittee shall certify to the Director at the time a financial assurance mechanism is submitted to the Department and when a financial assurance plan is placed in the facility operating record that the financial assurance mechanism meets all state and federal requirements. This date becomes the "annual review date" of the provision of financial assurance, unless a corporate guarantee is used, in which case the annual review date is 90 days after the end of the corporation's fiscal year.
 - (d) Annual update. The permittee shall annually review and update the financial assurance during the operating life and post-closure care period, or until the corrective action is completed, as applicable.
 - (A) The annual review shall include:

- (i) An adjustment to the cost estimate(s) for inflation and in the discount rate as specified in subsection (4)(a) of this rule;
 - (ii) A review of the closure, post-closure care and corrective action (if required) plans and facility conditions to assess whether any changes have occurred which would increase or decrease the estimated maximum costs of closure, post-closure care or corrective action since the previous review;
 - (iii) If a trust fund or other pay-in financial mechanism is being used, an accounting of amounts deposited and expenses drawn from the fund, as well as its current balance.
 - (B) The financial assurance mechanism(s) shall be increased or may be reduced to take into consideration any adjustments in cost estimates identified in the annual review.
 - (C) The annual update shall consist of a certification from the permittee submitted to the Department and placed in the facility operating record. The certification shall state that the financial assurance plan(s) and financial assurance mechanism(s) have been reviewed, updated and found adequate, and that the updated documents have been placed in the facility operating record. The annual update shall be no later than:
 - (i) The facility's annual review date; or
 - (ii) For a facility operating under a closure permit, by the date specified in OAR 340-94-100(3).
- (7) Department Review of Financial Assurance and Third-Party Certification.
- (a) The Department may at any time select a permittee to submit financial assurance plan(s) and financial assurance mechanism(s) for Department review. Selection for review will not occur more frequently than once every five years, unless the Department has reasonable cause for more frequent selection. The Department may, however, review such plans and mechanisms in conjunction with a site inspection at any time.
 - (b) A permittee who wants to provide "alternative financial assurance" pursuant to OAR 340-94-145(5)(g) shall submit its financial assurance plan and proposed financial assurance mechanism for Department review and approval on the schedule specified in section (3) of this rule. The submittal shall include certification from a qualified third party that the financial assurance mechanism meets all state and federal requirements for financial assurance including criteria in OAR 340-94-145(5)(g), and is reasonably designed to provide the required amount of financial assurance. The third-party certification shall be submitted in a format acceptable to the Department.
 - (c) The Department will review the financial assurance and the third-party certification, if applicable, for compliance with applicable laws.
- (8) Accumulation of any financial assurance funds:
- (a) The financial assurance mechanisms for closure, post-closure care and corrective action shall ensure the funds will be available in a timely fashion when needed. The permittee shall pay moneys into a trust fund in the amount and at the frequency specified in the financial assurance plan or obtain other financial assurance mechanisms as specified in the financial assurance plan, on the schedule specified in section (3) of this rule.
 - (A) Closure. The total amount of financial assurance required for closure shall be available in the form specified in the financial assurance plan or any updates thereto, whenever final closure of a municipal solid waste landfill unit is scheduled to occur in the "worst case" closure plan or in the Final Engineered Site Closure Plan.
 - (B) Post-closure care. The total amount of financial assurance required for post-closure care shall be available in the form specified in the financial assurance plan or any updates thereto, whenever post-closure care is scheduled to begin for a municipal solid waste landfill unit in the "Subtitle D" post-closure plan or in the Final Engineered Post-closure Plan.
 - (C) Corrective action. The total amount of financial assurance required for corrective action shall be available in the form specified in the financial assurance plan or any updates thereto on the schedule specified in 40 CFR §258.74.
 - (b) The permittee is subject to audit by the Department (or Secretary of State) and shall allow the Department access to all records during normal business hours for the purpose of determining compliance with this rule and OAR 340-94-145;
 - (c) If the Department determines that the permittee did not set aside the required amount of funds for financial assurance in the form and at the frequency required by the applicable financial assurance plan, or if the Department determines that the financial assurance funds were used for any purpose other than as required in section (1) of this rule, the permittee shall, within 30 days after notification by the Department, deposit a sufficient amount of financial assurance in the form required by the applicable financial assurance plan along with an additional amount of financial assurance

equal to the amount of interest that would have been earned, had the required amount of financial assurance been deposited on time or had it not been withdrawn for unauthorized use;

- (d) If financial assurance is provided under OAR 340-94-145(5)(a), (b) or (g), upon successful closure and release from permit requirements by the Department, any excess money in the financial assurance account must be used in a manner consistent with subsection (4)(e) of this rule. [Renumbered from OAR 340-94-150(7)]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the Department of Environmental Quality.]

PROPOSED AMENDMENT TO OAR 340-95-090

340-95-090

- (1) Financial Assurance Required. The owner or operator of a non-municipal land disposal site shall maintain a financial assurance plan with detailed written cost estimates of the amount of financial assurance that is necessary and shall provide evidence of financial assurance for the costs of:
 - (a) Closure of the non-municipal land disposal site;
 - (b) Post-closure maintenance of the non-municipal land disposal site; and
 - (c) Any corrective action required by the Department to be taken at the non-municipal land disposal site, pursuant to OAR 340-95-040(3).
- (2) Exemptions. The Department may exempt from the financial assurance requirements any non-municipal land disposal site including but not limited to demolition waste sites and industrial waste sites.
 - (a) Exemption criteria. To be eligible for this exemption, the applicant shall demonstrate to the satisfaction of the Department that the site meets all of the following criteria and that the site is likely to continue to meet all of these criteria until the site is closed in a manner approved by the Department:
 - (A) The non-municipal land disposal site poses no significant threat of adverse impact on groundwater or surface water;
 - (B) The non-municipal land disposal site poses no significant threat of adverse impact on public health or safety;
 - (C) No system requiring active operation and maintenance is necessary for controlling or stopping discharges to the environment;
 - (D) The area of the non-municipal land disposal site that has been used for waste disposal and has not yet been properly closed in a manner acceptable to the Department is less than and remains less than two acres or complies with a closure schedule approved by the Department.
 - (b) In determining if the applicant has demonstrated that a non-municipal land disposal site meets the financial assurance exemption criteria, the Department will consider existing available information including, but not limited to, geology, soils, hydrology, waste type and volume, proximity to and uses of adjacent properties, history of site operation and construction, previous compliance inspection reports, existing monitoring data, the proposed method of closure and the information submitted by the applicant. The Department may request additional information if needed.
 - (c) An exemption from the financial assurance requirement granted by the Department will remain valid only so long as the non-municipal land disposal site continues to meet the exemption criteria in subsection (2)(a) of this rule. If the site fails to continue to meet the exemption criteria, the Department may modify the closure permit to require financial assurance. [Renumbered from 340-95-050(3)-(5)]
- (3) Schedule for provision of financial assurance.
 - (a) For costs associated with the conceptual "worst-case" closure plan and the conceptual post-closure plan prepared pursuant to OAR 340-95-060(1)(a)(A) and OAR 340-95-065(1)(a), respectively: Evidence of the required financial assurance for closure and post-closure maintenance of the non-municipal land disposal site shall be provided on the following schedule:
 - (A) For a new non-municipal land disposal site: no later than the time the solid waste permit is issued by the Department and prior to first receiving waste; or

- (B) For a non-municipal land disposal site operating under a solid waste permit on November 4, 1993: by April 9, ~~1995~~ 1997.
- (b) For costs associated with the Final Engineered Site Closure Plan and the Final Engineered Post-closure Plan prepared pursuant to OAR 340-95-060(1)(a)(B) and OAR 340-95-065(1)(b) respectively: Evidence of the required financial assurance for closure and post-closure maintenance of the land disposal site shall be provided at the same time those two Plans are due to the Department.
- (c) Evidence of financial assurance for corrective action shall be provided before beginning corrective action.
- (d) Continuous financial assurance shall be maintained for the facility until the permittee or other person owning or controlling the site is no longer required to demonstrate financial responsibility for closure, post-closure care or corrective action (if required).
- (4) Financial assurance plans. The financial assurance plan is a vehicle for determining the amount of financial assurance necessary and demonstrating that financial assurance is being provided. A financial assurance plan shall include but not be limited to the following, as applicable:
- (a) Cost Estimates. A detailed written estimate of the third-party costs in current dollars (as calculated using a discount rate equal to the current yield of a 5-year U.S. Treasury Note as published in the Federal Reserve's H.15 (519) Selected Interest Rates for the week in which the calculation is done) of:
- (A) Closing the non-municipal land disposal site;
- (B) Providing post-closure care, including installing, operating and maintaining any environmental control system required on the non-municipal land disposal site;
- (C) Performing required corrective action activities; and
- (D) Complying with any other requirement the Department may impose as a condition of issuing a closure permit, closing the site, maintaining a closed facility, or implementing corrective action.
- (b) The source of the cost estimates;
- (c) A detailed description of the form of the financial assurance and a copy of the financial assurance mechanism;
- (d) A method and schedule for providing for or accumulating any required amount of funds which may be necessary to meet the financial assurance requirement;
- (e) A proposal with provisions satisfactory to the Department for disposing of any excess moneys received or interest earned on moneys received for financial assurance, if applicable.
- (A) To the extent practicable and to the extent allowed by any franchise agreement, the applicant's provisions for disposing of the excess moneys received or interest earned on moneys shall provide for:
- (i) A reduction of the rates a person within the area served by the non-municipal land disposal site is charged for solid waste collection service as defined by ORS 459.005; or
- (ii) Enhancing present or future solid waste disposal facilities within the area from which the excess moneys were received.
- (B) If the non-municipal land disposal site is owned and operated by a private entity not regulated by a unit of local government, excess moneys and interest remaining in any financial assurance reserve shall be released to that business entity after post-closure care has been completed and the permittee is released from permit requirements by the Department.
- (f) The financial assurance plan shall contain adequate accounting procedures to insure that the permittee does not collect or set aside funds in excess of the amount specified in the financial assurance plan or any updates thereto or use the funds for any purpose other than required by paragraph (8)(a) of this rule; [Renumbered from 340-95-090(8)(b)]
- (g) The certification required by subsection (6)(c) of this rule; and
- (h) The annual updates required by subsection (6)(d) of this rule.
- (5) Amount of Financial Assurance Required. The amount of financial assurance required shall be established as follows:

- (a) Closure. Detailed cost estimates for closure shall be based on the conceptual "worst-case" closure plan or the final Engineered Site Closure Plan, as applicable. Cost estimates for the Final Engineered Site Closure plan shall take into consideration at least the following:
 - (A) Amount and type of solid waste deposited in the site;
 - (B) Amount and type of buffer from adjacent land and from drinking water sources;
 - (C) Amount, type, availability and cost of required cover;
 - (D) Seeding, grading, erosion control and surface water diversion required;
 - (E) Planned future use of the disposal site property;
 - (F) The portion of the site property closed before final closure of the entire site; and
 - (G) Any other conditions imposed on the permit relating to closure of the site.
 - (b) Post-closure care. Detailed cost estimates for post-closure care shall be based on the conceptual post-closure plan or the Final Engineered Post-closure Plan, as applicable. Cost estimates for the Final Engineered Post-closure Plan shall also take into consideration at least the following:
 - (A) Type, duration of use, initial cost and maintenance cost of any active system necessary for controlling or stopping discharges; and
 - (B) Any other conditions imposed on the permit relating to post-closure care of the site.
 - (c) Corrective action. Estimated total costs of required corrective action activities for the entire corrective action period, as described in a corrective action report pursuant to requirements of OAR 340-95-040(3).
 - (d) If a permittee is responsible for providing financial assurance for closure, post-closure care and/or corrective action activities at more than one non-municipal land disposal site, the amount of financial assurance required is equal to the sum of all cost estimates for each activity at each facility.
- (6) How Financial Assurance Is to Be Provided and Updated.
- (a) The permittee shall submit to the Department a copy of the first financial assurance mechanism prepared in association with a conceptual "worst-case" closure plan, a Final Engineered Site Closure Plan, a conceptual post-closure plan, a Final Engineered Post-closure Plan, and a corrective action report.
 - (b) The permittee shall also place a copy of the applicable financial assurance plan(s) in the facility operations office or another location approved by the Department on the schedule specified in Section (3) of this rule.
 - (c) The permittee shall certify to the Director at the time a financial assurance plan is placed in the facility operations office or other approved location that the financial assurance mechanism meets all state requirements. This date becomes the "annual review date" of the provision of financial assurance, unless a corporate guarantee is used, in which case the annual review date is 90 days after the end of the corporation's fiscal year.
 - (d) Annual update. The permittee shall annually review and update the financial assurance during the operating life and post-closure care period, or until the corrective action is completed, as applicable.
 - (A) The annual review shall include:
 - (i) An adjustment to the cost estimate(s) for inflation and in the discount rate as specified in subsection (4)(a) of this rule;
 - (ii) A review of the closure, post-closure and corrective action (if required) plans and facility conditions to assess whether any changes have occurred which would increase or decrease the estimated maximum costs of closure, post-closure care or corrective action since the previous review;
 - (iii) If a trust fund or other pay-in financial mechanism is being used, an accounting of amounts deposited and expenses drawn from the fund, as well as its current balance.
 - (B) The financial assurance mechanism(s) shall be increased or may be reduced to take into consideration any adjustments in cost estimates identified in the annual review.

- (C) The annual update shall consist of a certification from the permittee submitted to the Department and placed in the facility operations office or other approved location. The certification shall state that the financial assurance plan(s) and financial assurance mechanism(s) have been reviewed, updated and found adequate, and that the updated documents have been placed at the facility operations office or other approved location. The annual update shall be no later than:
 - (i) The facility's annual review date; or
 - (ii) For a facility operating under a closure permit, by the date specified in OAR 340-95-050(3).
- (7) Department Review of Financial Assurance and Third-Party Certification.
 - (a) The Department may at any time select a permittee to submit financial assurance plan(s) and financial assurance mechanism(s) for Department review. Selection for review will not occur more frequently than once every five years, unless the Department has reasonable cause for more frequent selection. The Department may, however, review such plans and mechanisms in conjunction with a site inspection at any time.
 - (b) A permittee who wants to provide "alternative financial assurance" pursuant to OAR 340-95-095(5)(g) shall submit its financial assurance plan and proposed financial assurance mechanism for Department review and approval on the schedule specified in section (3) of this rule. The submittal shall include certification from a qualified third party that the financial assurance mechanism meets all state requirements for financial assurance, and is reasonably designed to provide the required amount of financial assurance. The third-party certification shall be submitted in a format acceptable to the Department.
 - (c) The Department will review the financial assurance and the third-party certification, if applicable, for compliance with state laws.
- (8) Accumulation of any financial assurance funds:
 - (a) The financial assurance mechanisms for closure, post-closure care and corrective action shall ensure the funds will be available in a timely fashion when needed. The permittee shall pay moneys into a trust fund in the amount and at the frequency specified in the financial assurance plan or obtain other financial assurance mechanisms as specified in the financial assurance plan, on the schedule specified in section (3) of this rule.
 - (A) Closure. The total amount of financial assurance required for closure shall be available in the form specified in the financial assurance plan or any updates thereto, whenever final closure of a non-municipal land disposal site unit is scheduled to occur in the conceptual "worst case" closure plan or in the Final Engineered Site Closure Plan.
 - (B) Post-closure care. The total amount of financial assurance required for post-closure care shall be available in the form specified in the financial assurance plan or any updates thereto, whenever post-closure care is scheduled to begin for a non-municipal land disposal site unit in the conceptual post-closure plan or in the Final Engineered Post-closure Plan.
 - (C) Corrective action. The total amount of financial assurance required for corrective action shall be available in the form specified in the financial assurance plan or any updates thereto on the schedule specified in the corrective action selected pursuant to OAR 340 Division 40.
 - (b) The permittee is subject to audit by the Department (or Secretary of State) and shall allow the Department access to all records during normal business hours for the purpose of determining compliance with this rule and OAR 340-95-095;
 - (c) If the Department determines that the permittee did not set aside the required amount of funds for financial assurance in the form and at the frequency required by the applicable financial assurance plan, or if the Department determines that the financial assurance funds were used for any purpose other than as required in section (1) of this rule, the permittee shall, within 30 days after notification by the Department, deposit a sufficient amount of financial assurance in the form required by the applicable financial assurance plan along with an additional amount of financial assurance equal to the amount of interest that would have been earned, had the required amount of financial assurance been deposited on time or had it not been withdrawn for unauthorized use;
 - (d) If financial assurance is provided under OAR 340-95-095(5)(a), (b) or (g), upon successful closure and release from permit requirements by the Department, any excess money in the financial assurance account must be used in a manner consistent with subsection (4)(e) of this rule. [Renumbered from OAR 340-94-150(7)]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the Department of Environmental Quality.]

ATTACHMENT B

**Statement of Findings of Serious Prejudice
and
Attorney General Approval of Temporary Rule Justification**

Agency: Environmental Quality Commission

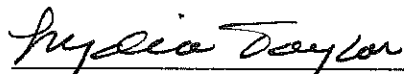
Temporary Rules: OAR 340-94-140 and 340-95-090 Relating to Financial Assurance for Solid Waste Landfills

1. The Environmental Quality Commission finds that its failure to promptly take this rulemaking action will result in serious prejudice to the public interest.
2. This finding of serious prejudice is based on the Commission's conclusion that local governments and others that operate or are permittees for solid waste landfills would be caused economic hardship if the Commission does not take immediate action to postpone the deadline for landfills to obtain or demonstrate financial assurance. One of the means by which local governments expect to be able to demonstrate financial assurance is through meeting the criteria of a "local government financial test" to show that sufficient financial resources are available to properly close, monitor, and maintain the landfill. Although the US Environmental Protection Agency (EPA) has proposed the criteria to be used in this final test, neither EPA nor the Commission has yet adopted these criteria. Thus, local governments that might use this test to demonstrate financial assurance may be forced to adopt other, more expensive measures such as developing trust funds, purchasing landfill closure insurance, or other types of financial measures if the Commission fails to adopt this temporary rule.
3. The Commission concludes that following the permanent rulemaking process, rather than taking this temporary rulemaking action, will result in the consequences stated above because the current deadline for obtaining or demonstrating financial assurance will take effect at least two months before a permanent rule delaying that deadline could be adopted.
4. This temporary rulemaking will mitigate these consequences by delaying the requirement for financial assurance, allowing time for appropriate financial test to be developed and adopted, and allowing solid waste landfill operators and permittees more time to develop or obtain financial assurance.

ON BEHALF OF THE COMMISSION:

APR 18 1995

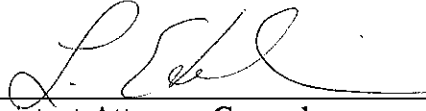
Date


Lydia Taylor, Interim Director

ATTORNEY GENERAL APPROVAL

I have reviewed this temporary rule as required by Oregon Laws 1993, chapter 729, section 6, and find that the above statement of agency findings is legally sufficient. I therefore approve this rule as required by, and for the purposes of, Oregon Laws 1993, chapter 729, section 6.

3/29/95
Date



Assistant Attorney General

Environmental Quality Commission

- Rule Adoption Item
- Action Item
- Information Item

Agenda Item D
April 14, 1995 Meeting

Title:

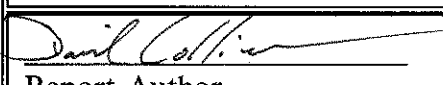
Adoption of Lakeview PM₁₀ Control Plan as an amendment to the Clean Air Act State Implementation Plan (SIP).

Summary:

The Lakeview PM₁₀ Control Plan includes emission control strategies for the Town of Lakeview, whose ambient air quality violates the federal air quality health standard for respirable particulate (PM₁₀). The Plan is designed to bring Lakeview into compliance with standards by the Clean Air Act attainment deadline of December 31, 1999. The Plan also includes the following: a) revisions to the Oregon Department of Forestry (ODF) Smoke Management Plan to add a Lakeview voluntary Special Protection Zone (SPZ) for prescribed burning; b) housekeeping and conforming rule amendments. Amendments to the Smoke Management Plan also eliminates SPZ's for the Grants Pass and Eugene-Springfield PM₁₀ Nonattainment Areas, which have achieved attainment with the PM10 standard.

Department Recommendation:

Adopt the Lakeview PM₁₀ Control Plan and associated rule amendments as presented in Attachment A


Report Author


Division Administrator


Director

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

State of Oregon
Department of Environmental Quality

Memorandum[†]

Date: March 22, 1995

To: Environmental Quality Commission
From: Lydia Taylor, Interim Director *Lydia Taylor*
Subject: Agenda Item D, April 14, 1995, EQC Meeting

1. PM₁₀ Control Strategy for the Lakeview PM₁₀ Nonattainment Area.
2. Revisions to the Oregon Department of Forestry (ODF) Smoke Management Plan.
3. Related housekeeping and conforming rule amendments, with one unrelated housekeeping rule amendment to Division 21.

Background

On January 6, 1995, the Director authorized the Air Quality Division to proceed to a public rulemaking hearing on the following new rules and amendments:

- (1) An emission control strategy for the Lakeview PM₁₀ Nonattainment Area, including related housekeeping and conforming rule amendments.
- (2) Revision to the Oregon Department of Forestry (ODF) Smoke Management Plan to establish a Lakeview Special Protection Zone (SPZ) for prescribed burning, and eliminating existing SPZ's for the Grants Pass and Eugene-Springfield PM₁₀ Nonattainment Areas.
- (3) Clarification of rule language relating to General Emission Standards for Particulate Matter, as part of Oregon Administrative Rules, Division 21.

Pursuant to the authorization, hearing notice was published in the Secretary of State's Bulletin on February 1, 1995. On January 10, 1995 the Hearing Notice and informational materials were mailed to the mailing list of those persons who have asked to be notified of rulemaking actions, and to a mailing list of persons known by the Department to be potentially affected by or interested in the proposed rulemaking action.

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

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A Public Hearing was held on February 16, 1995, 7:00 pm, at Lakeview Town Hall, Lakeview, OR. with David Collier serving as Presiding Officer. The Presiding Officer's Report (Attachment C) summarizes the oral testimony presented at the hearing. Four people attended, one provided testimony.

Written comment was received through February 22, 1995 at 5:00 pm. A list of written comments received and the Department's response is included as Attachment D. Four people commented. (A copy of the comments is available upon request.) Minor technical modifications were made to the plan based on comments received from EPA.

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

Issue this Proposed Rulemaking Action is Intended to Address

Ambient air quality in the Town of Lakeview, Oregon (population 4,600) has violated the 24-hour national ambient air quality health standard for respirable particulate (PM₁₀). As a result, Lakeview has been designated by the Environmental Protection Agency as a moderate PM₁₀ Nonattainment Area. Exposure to respirable particulate matter (PM₁₀) is of concern because of human health effects such as changes in lung function and increased respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alteration in the body's defense system against foreign materials, damage to lung tissue, increased risk of cancer and, in extreme cases, premature death. Most sensitive to the effects of respirable particulate matter are people with chronic heart disease and those with influenza, asthmatics, the elderly, children and mouth-breathers.

PM₁₀ emissions are primarily caused by combustion sources and fine soil dust. The significant emission sources contributing to nonattainment in Lakeview have been identified as woodsmoke from residential woodheating, smoke from residential open burning, and fine dust from winter road sanding. Emissions from the local wood products industry also contribute to the airshed, but are not a significant contributor to nonattainment. The redesignation of Lakeview to nonattainment requires the Department to develop a PM₁₀ emission control strategy which will reduce emissions and demonstrate compliance with standards by dates specified in the Clean Air Act. In addition to the main emission reduction strategies, the Lakeview PM₁₀ Control Plan will require minor

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related housekeeping and conforming rule amendments. This rule package also includes one other unrelated minor housekeeping amendment to Division 21 to clarify the intent of the rule. Housekeeping changes to OAR 340-21-110 will clarify the applicability of Special Control Areas as used in the General Emission Standards for Particulate Matter. Special Control Areas define specific regions in the state within which additional emission control requirements have been established beyond the general emission standards for particulate matter. Existing rule language is unclear regarding the applicability of statewide general emission standards, and the additional requirements for special control areas. This housekeeping change clarifies which particulate emission standards apply statewide, and which emission standards apply in Special Control Areas. The amendment to OAR 340-21-012 will clarify that Opacity and Grain Loading Standards apply in all areas of the state. An additional housekeeping change to OAR 340-21-200 clarifies which PM₁₀ nonattainment areas are subject to industrial contingency requirements. The amendments to Division 21 are not substantive changes, but merely clarify the existing rule.

In order to help protect the nonattainment area against potential prescribed burning smoke impacts during the winter exceedence period, a Special Protection Zone (SPZ) for prescribed burning is proposed. The SPZ would consist of a 20 mile zone around Lakeview, where certain voluntary prescribed forestry burning restrictions would apply between November 15th and February 15th each year.

In amending the ODF Smoke Management Plan to add a Lakeview prescribed burning SPZ, the Department is proposing to remove current SPZ's for the Grants Pass and Eugene-Springfield nonattainment areas. These measures are believed to be no longer necessary given that these areas have successfully demonstrated attainment with the PM₁₀ standard. The amount of prescribed burning in these areas has been significantly reduced in recent years, therefore removal of these requirements will not jeopardize the continued maintenance of attainment.

Relationship to Federal and Adjacent State Rules

The Clean Air Act as amended in 1990 requires PM₁₀ control strategies to be developed and submitted for EPA approval by date certain. The Clean Air Act submittal deadline for the Lakeview PM₁₀ Control Plan is April 25, 1995. The attainment date is December 31, 1999. The proposed control strategy is consistent with federal PM₁₀ nonattainment area requirements. Adjacent states have adopted similar control measures for PM₁₀ nonattainment areas.

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Authority to Address the Issue

ORS 468A.035
OAR 340-20-047
P.L. 101-549

Comprehensive Air Pollution Control Plan.
State of Oregon Clean Air Act Implementation Plan.
Clean Air Act Amendments of 1990

Draft Directive
1-4-1-601

Operation Guidance for the Oregon Smoke Management Program.

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

In 1993 the Town of Lakeview established a citizens air quality advisory committee to work with the Department on reviewing potential PM₁₀ control options. The Department worked closely with the Committee during control plan development to arrive at an effective and equitable set of control strategies. During this process appropriate alternatives for control strategies were considered. The Committee has presented a resolution recommending the selected control measures to both the Town of Lakeview and Lake County governments. Based on the Committee's recommendations, the Town of Lakeview has adopted local ordinances implementing the necessary control measures. Lake County adopted complementary ordinances at their March 15, 1995 meeting.

The Department worked closely with the Oregon Department of Forestry to establish a Special Protection Zone for the Lakeview PM₁₀ nonattainment area. The Oregon Department of Forestry (ODF) is responsible for implementing the revised Oregon Smoke Management Plan to adopt the Lakeview SPZ and delete the Eugene/Springfield and Grants Pass SPZs. The Department will submit these amendments to EPA as a revision to the Oregon SIP.

Fugitive dust emissions from winter road sanding activities have been identified as one significant source of PM₁₀ in Lakeview. The Department has worked with the Department of Transportation to identify emission reduction strategies for road sanding dust.

The Department worked closely with the Environmental Protection Agency during the initial technical analysis phase of plan development. The technical analysis is supported by EPA, and the proposed control strategy is consistent with the 1990 federal Clean Air Act, and EPA guidance on Reasonably Available Control Measures (RACM) for PM₁₀ nonattainment areas. RACM measures proposed for Lakeview are similar to those adopted and implemented in the other Oregon PM₁₀ nonattainment areas.

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

The Lakeview control strategy has been designed to ensure attainment with the national ambient air quality health standard for PM₁₀ (24-hour average), and meet the requirements of the Clean Air Act. Implementation of the Lakeview PM₁₀ Control Strategy involves five primary measures which will have some affect on the public, industry, and local government of Lakeview, as well as state and federal agencies. Lakeview residents with woodstoves and fireplaces, and those who conduct open burning, will be the two groups most effected.

1. **Residential Woodheating Measures.** The principal means of achieving the needed reductions in Lakeview is through a voluntary woodburning curtailment and emission reduction program, an aggressive public education program, a noncertified woodstove replacement program, a ban on the installation of noncertified stoves, and restrictions on residential open burning. Under the voluntary curtailment program, woodburning households will be asked to curtail woodburning in stoves and fireplaces during air stagnation episodes. A minimum compliance target rate of 30% has been set for the voluntary program. Low income and sole source wood-heated homes are not expected to comply.

The typical cost to comply with woodburning curtailment is estimated at \$2-\$5 per curtailment day per woodburning home, depending upon the type of alternative heat, amount of weatherization, and size of home. According to the 1993 Lakeview Woodheating Survey, approximately (37%) of the Lakeview population use wood as their main source of heat. It is expected that homeowners will be asked not to burn their woodstove or fireplace on 10 to 20 days during the winter heating season when the voluntary curtailment program is in effect. Based on these estimates, the total cost per household associated with the voluntary curtailment program is expected to range from \$20 to \$100 each year.

Some low and moderate income residents will benefit from a noncertified woodstove replacement assistance program administered by the Town of Lakeview and funded through a \$200,000 State Community Development Block Grant. It is estimated that this program will benefit approximately (70-90) low and moderate income woodburning households within the nonattainment area.

For those households independently installing a new woodheating system, the ban on the sale and installation of used, noncertified woodstoves will eliminate the lower cost option of a used, noncertified woodstove.

Residential open burning in Lakeview will be managed through a permit system restricting open burning to good ventilation days. These restrictions will reduce the number of winter days on which homeowners may dispose of yard debris. Violators of open burning permit conditions will be subject to civil penalty.

The woodheating strategy is implemented through the Lakeview Air Quality Program ordinance and the Department's rules regulating woodstoves.

2. **Industrial Emission and Growth Measures.** Based on analysis of industrial impacts and the attainment needs of the community, the Department has concluded that both major industrial sources in Lakeview currently meet the intent of the Reasonably Available Control Technology (RACT) requirement, and that no additional emission controls are required at this time. One major facility has voluntarily agreed to relinquish emission credits through a revision to their Air Contaminant Discharge Permit, permanently reducing permitted emissions by 70%. While not needed for attainment purposes, additional Reasonably Available Control Measures (RACM) for industrial sources have been added in order to provide additional assurance of overall emission reduction in the community. RACM measures for controlling plant site fugitive dust, as well as requirements for enhanced operation and maintenance, and emission source testing, will provide an extra safety margin for emission reduction at a reasonable cost.

New or expanding industrial sources will be effected within the Lakeview PM_{10} nonattainment area through a revision of the Significant Emission Rate (SER). In order to assure that increases from industrial emissions within the nonattainment area do not jeopardize emission reductions gained from other PM_{10} control strategies, the Department proposes that New Source Review rules (OAR 340-28-110, and 340-28-1930) be revised for Lakeview, reducing the significant emission rate (trigger for new source review for new or major modified sources) from 15 to 5 tons per year. This proposed revision would be consistent with existing SER requirements for the Klamath Falls and Medford-Ashland PM_{10} nonattainment areas. Any new or expanding source with an emission increase of greater than 5 tons/yr must fully offset the increase at a 1:1 ratio. This could be accomplished by reducing other on-site emissions sources, or by reducing off-site emissions such as through the replacement of noncertified woodstoves. A source may chose to install Lowest Achievable Emission Rate (LAER) level controls in lieu of providing emission offsets.

3. **Road Sanding-Dust Measures.** The Oregon Department of Transportation will coordinate with Lakeview local officials to reduce emissions from winter road sanding through the use of cleaner materials and increased rapid cleanup. All road sanding emission reduction measures will be consistent with public safety.

4. **Prescribed Forestry Burning Measures.** In order to protect the Lakeview PM₁₀ Nonattainment Area from prescribed burning smoke impacts, a Lakeview SPZ will be established. Operation of this SPZ will be the responsibility of ODF, and between November 15 and February 15 will require daily weather forecasting, issuing burning instructions, and tracking burning activity for prescribed burning within a 20 mile area of the Fremont National Forest around Lakeview. The SPZ will affect private land owners who wish to conduct prescribed burning during the winter control period. However, over the last 7 years, ODF estimates that only 3-4 percent of the average annual burning in the Fremont National Forest occurs in the SPZ during this time period.

Eliminating the two SPZs for the Eugene/Springfield and Grants Pass nonattainment areas would allow ODF to save the cost associated with operating these SPZs, starting in November 1995.

5. **Contingency or Backup Measures.** The Clean Air Act Amendments of 1990 requires states to include contingency measures in the PM₁₀ control strategy that can be automatically implemented in the event that the base attainment strategy fails to demonstrate Reasonable Further Progress (RFP) toward attainment, or attainment of the NAAQS by the Clean Air Act deadline. The Reasonable Further Progress (RFP) milestone of April 25, 1998 will require an evaluation of the success achieved in implementing the primary PM₁₀ control strategy and in reducing emissions. If the Department, in consultation with the Town of Lakeview and the EPA, determine that RFP has not been demonstrated, contingency measures would be implemented.

The Lakeview PM₁₀ Control Strategy includes the following contingency measures which will effect the same groups as described above:

- a) The Lakeview Clean Air Ordinance provides for the implementation of a mandatory residential woodheating curtailment program should the area fail to show Reasonable Further Progress by April 25, 1998, or attain the standard by the December 31, 1999 deadline. A mandatory curtailment program would include enforcement of curtailment requirements, including possible civil penalties. Generally, low income and sole source woodburning homes are exempt from curtailment requirements.
- b) The state has authority to require, as a PM₁₀ contingency measure, the removal of noncertified woodstoves in a PM₁₀ nonattainment area upon sale of a home. If implemented, homeowners would lose any typical value assigned to the used stove, typically in a range of \$50 to \$300.

c) As a contingency, the voluntary SPZ forestry slash burning program would be upgraded to a mandatory program requiring more stringent management of prescribed burning around Lakeview.

Summary of Significant Public Comment and Changes Proposed in Response

The following summarizes public comment and Department responses described in Attachment D. Testimony included comments from environmental groups, local industry, and the Environmental Protection Agency, Region 10. The primary focus of the testimony related to Special Protection Zones and the effective date of the proposed 5 ton/yr Significant Emission Rate.

1. The Department received comments from EPA Region 10 in support of the control strategy and technical analysis. EPA suggested minor technical revisions related to the plan.

The Department concurs with EPA's suggested revisions, and appropriate adjustments have been made.

2. The Department received comments from one facility expressing concern about the proposed lowering of the Significant Emission Rate (SER). This facility has recently submitted a complete Air Contaminant Discharge Permit application for siting in Lakeview. They believe that they should be subject to the SER rule as it existed at the time their permit application was found complete by the Department. This would allow the facility to be considered under the existing 15 ton/yr SER. If the permit application is processed under the requirements of the proposed 5 ton/yr SER, this source would be above the 5 ton/yr limit, and therefore subject to the emission offset requirements of New Source Review.

The Department agrees that it would be unreasonable to require emission offsets under the proposed 5 ton/yr SER when a complete permit application has been accepted by the Department under the existing 15 ton/yr SER rule. It was not the intention of the Department to require emission offsets at the initial operation phase of this facility. However, any future increases above the 5 ton/yr SER will be subject to New Source Review requirements. The appropriate rule language of Division 28 has been clarified to specify the effective date of the 5 ton/yr Significant Emission Rate as May 1, 1995. Permit applications received prior to that date must be deemed complete by the Department to be subject to the existing 15 ton/yr SER.

3. The Department received several comments about the proposed Lakeview SPZ. The general manager for Fremont Saw Mill stated his concerns that the SPZ would reduce flexibility to manage forest wastes, and could therefore have an adverse economic impact. The Sierra Club believes that the Lakeview SPZ should be more restrictive than proposed.

After evaluating the amount and frequency of forest burning activities around Lakeview, the Department believes that the voluntary requirements of a Special Protection Zone will provide an appropriate level of additional protection for the Lakeview airshed at a reasonable cost to public and private land managers.

4. The Department received comments from the Sierra Club expressing concern that maximum permitted industrial emissions were not taken into consideration when developing the Lakeview attainment demonstration.

The Department's response, is that maximum permitted industrial emissions were taken into account in developing the attainment demonstration. The attainment demonstration is required to reflect a worse-case scenario, including all industrial emissions projected to their maximum allowable emission level. The Lakeview PM₁₀ Control Plan does include maximum allowable industrial emissions in the demonstration of attainment.

5. The Department received comments from the Sierra Club proposing that Continuous Emission Monitoring equipment be required on all major industrial boilers.

The Department's response, is that both receptor and dispersion modeling analysis have confirmed that industrial emission impacts do not significantly contribute to exceedences of the 24-hour average ambient air quality standard in Lakeview. Therefore the Department believes that the additional expense for emission monitoring is not warranted at this time.

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

The air quality program adopted through this plan will be implemented by the Town of Lakeview. The primary strategy will be to provide information to the public on the health effects of woodburning, and to ask that woodstoves not be burned during periods of air stagnation. An air stagnation "curtailment" advisory will be provided to the public each day during the winter PM₁₀ season. Local residents will further contribute to the effort by restricting open burning. The Town will administer a noncertified woodstove

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replacement program for low income woodburning households. Local industry will contribute by decreasing maximum allowable emissions and enhancing operation and maintenance plans. The Oregon Department of Transportation will contribute by reducing dust emissions from road sanding. Local forest land managers will contribute by mitigating possible prescribed burning impacts during air stagnation conditions.

After EQC adoption, the PM₁₀ Control Plan will be submitted to the Environmental Protection Agency for review and approval.

Recommendation for Commission Action

It is recommended that the Commission adopt, as an amendment to the State of Oregon Clean Air Act Implementation Plan (SIP), the Lakeview PM₁₀ Control Plan and associated conforming rule amendments as presented in Attachment A of the Department Staff Report.

Attachments

- A. PM₁₀ Control Plan and Rule (Amendments) Proposed for Adoption
- B. Supporting Procedural Documentation:
 - 1. Legal Notice of Hearing
 - 2. Public Notice of Hearing (Chance to Comment)
 - 3. Rulemaking Statements (Statement of Need)
 - 4. Fiscal and Economic Impact Statement
 - 5. Land Use Evaluation Statement
 - 6. Questions to be Answered to Reveal Potential Justification for Differing from Federal Requirements
- C. Presiding Officer's Report on Public Hearing
- D. List of Comments Received and Department's Evaluation of Public Comment
- E. Rule Implementation Plan
- F. Advisory Committee Resolution, Air Quality Improvement Plan, and Local Ordinances

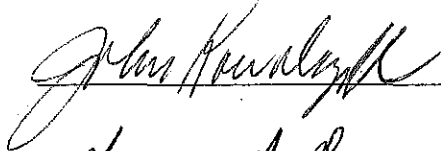
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Reference Documents (available upon request)


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

Approved:

Section:

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Division:

_____

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Phone: (503) 229-5177

Date Prepared: March 22, 1995

DC:dc (3/22/95)

State of Oregon
Department of Environmental Quality
Air Quality Division

Lakeview PM₁₀ Nonattainment Area

A Plan For Attaining Compliance
With 24-Hour National Ambient Air
Quality Health Standard
For PM₁₀

November, 1994

PM₁₀ Control Strategy
For The Lakeview PM₁₀ Nonattainment Area

A Plan for Attaining
Compliance with National
Ambient Air Quality Standards
For PM₁₀

State of Oregon
Department of Environmental Quality
Air Quality Division

April, 1995

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Executive Summary

The US Environmental Protection Agency (EPA) adopted a new particulate National Ambient Air Quality Standard (NAAQS) for PM₁₀ on July 1, 1987. PM₁₀ particulate is less than 10 micrometers in aerodynamic diameter or about one-tenth of the diameter of a human hair. The NAAQS adopted by the US Environmental Protection Agency were established to protect public health and welfare. Amendments to the Clean Air Act in 1990 established additional requirements for existing and newly designated PM₁₀ nonattainment areas. The Town of Lakeview, Oregon was designated by the Environmental Protection Agency as nonattainment for PM₁₀ on October 25, 1993, requiring the adoption of PM₁₀ control strategies adequate to demonstrate attainment by December 31, 1999. The attainment plan must also include contingency measures to be implemented if reasonable further progress is not shown, or attainment is not reached by the appropriate Clean Air Act deadline. This document describes the State of Oregon's plan to attain the PM₁₀ standard in Lakeview by the Clean Air Act deadline.

Exposure to respirable particulate matter is of concern because of human health effects such as changes in lung functions and increased respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alteration in the body's defense system against foreign materials, damage to lung tissue, increased risk of cancer and, in extreme cases, premature death. Most sensitive to the effects of respirable particulate matter are people with chronic obstructive pulmonary cardiovascular disease and those with influenza, asthmatics, the elderly, children and mouth-breathers.

The annual average NAAQS for PM₁₀ is 50 micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$). The 24-hour PM₁₀ NAAQS is 150 $\mu\text{g}/\text{m}^3$, and is not to be exceeded more than an average of one time per year, averaged over a consecutive three year period.

In Lakeview, the annual average concentration of PM₁₀ considering data from calendar years 1992 and 1993 was 31.5 $\mu\text{g}/\text{m}^3$, and is in compliance with the annual average PM₁₀ NAAQS. Air quality measurements taken in Lakeview have indicated that the 24-hour PM₁₀ NAAQS was exceeded on average about 3 days per year during the winter months of October through March (1991 to 1994). This frequency of exceedances violates the 24-hour NAAQS for PM₁₀. The maximum measured 24-hour PM₁₀ concentration occurred on January 27, 1993 (256 $\mu\text{g}/\text{m}^3$) at the Center & M Street site.

The Lakeview PM₁₀ Nonattainment Area Boundary has been identified as the Lakeview Urban Growth Boundary (UGB). A winter-season 24-hour inventory of PM₁₀ emissions, for the period 1992-94, developed for the Lakeview UGB indicates that the major sources of particulate emissions present are residential wood combustion (58%), industrial emissions (21%), and soil dust (11%). On an annual emission inventory basis, these sources contribute 42%, 35% and 19%, respectively. Emission source contributions to worst-case 24-hour conditions have been evaluated through receptor modeling techniques which estimate source contributions to ambient air quality on the basis of their chemical "fingerprints". This analysis estimates the actual ground level impact of major emission source categories during worst-case meteorology.

A mobile nephelometer survey conducted in January 1991 documented the spatial distribution of PM₁₀ concentrations in Lakeview. The associated isopleths indicate generally low concentration gradients. A relatively uniform distribution of emissions is depicted, however one area centrally located within the urbanized area has indicated elevated PM₁₀ concentrations. Based on the isopleth study, a reference method sampler was placed in the area of highest concentration (Center & M Street), and sampling has been conducted there since October 1991. Based on the 1991 mobile nephelometer survey, as well as ambient air monitoring conducted at Fremont School, Center & "M", and 4th & "L" Streets, the Center & "M" site has been shown to generally represent the highest PM₁₀ levels within the Urban Growth Boundary. Development of an attainment plan which assures attainment and maintenance of the NAAQS at the Center & "M" site should therefore be adequate to demonstrate attainment of the NAAQS anywhere within the airshed.

PM₁₀ design values are those representative 24-hour worst-case and annual average concentrations from which reductions must be made to achieve compliance with the NAAQS. Analysis by three independent analytical techniques of all available PM₁₀ air quality data over the period October 1991 to April 1994 (the largest available database) indicates design values (24-hour average) ranging from 196 $\mu\text{g}/\text{m}^3$ to 217 $\mu\text{g}/\text{m}^3$. To be conservative (most protective of air quality) the higher value of 217 $\mu\text{g}/\text{m}^3$ has been used for attainment purposes. Control strategies included in this attainment plan have been designed to address the 24-hour NAAQS, and reduce projected 24-hour concentrations of PM₁₀ by a minimum of 67 $\mu\text{g}/\text{m}^3$ (217 - 150 $\mu\text{g}/\text{m}^3$). Achieving the necessary air quality improvements will require a 37% reduction in future (1999) 24-hour worst-case day emissions within the Urban Growth Boundary.

The annualized average PM₁₀ values for the period October 1991 through April 1994 is 41 $\mu\text{g}/\text{m}^3$, which indicates compliance with the annual average NAAQS of 50 $\mu\text{g}/\text{m}^3$. Since Lakeview has shown compliance with the annual NAAQS for PM₁₀, no attainment demonstration is required.

EMISSION SOURCE APPORTIONMENT:

Development of strategies designed to attain and maintain the PM₁₀ NAAQS requires an accurate knowledge of contributions that sources make to the measured PM₁₀ aerosol mass. Three approaches are commonly used to estimate source contributions: (1) receptor model analysis based on the chemical properties of the aerosol measured at the receptor, (2) atmospheric dispersion modeling, and (3) emission inventory. Seventeen PM₁₀ samples from the Center & M Street site have been evaluated through the Chemical Mass Balance (CMB) receptor source apportionment model. Six of the analyzed samples exceeded the 24-hour average NAAQS of 150 µg/m³, and were collected exclusively during the winter months. Modeling results provide estimates of the relative emission contributions from local sources impacting the nonattainment area. This source apportionment includes, soil dust 8%, industrial boilers 3%, and residential woodsmoke 77%. Other miscellaneous sources account for the remaining 12%.

A dispersion modeling analysis of hog fuel boiler impacts was conducted to independently evaluate CMB source contribution estimates at the reference monitor site, and the potential for significant industrial impacts. Dispersion modeled boiler impacts ranged from 0.3 to 7.4 ug/m³, while the CMB predicted boiler impacts averaged 6.3 ug/m³. The dispersion modeling results compare favorably with the average exceedance day CMB estimate for industrial boiler impacts, and support the relatively low contribution of hog fuel boiler emissions at the Center & M Street monitor as evaluated by CMB analysis. Average worst-case day soil dust impacts as estimated by both CMB (8%), and emission inventory (11%) are in close agreement (within 3%).

CONTROL STRATEGY OVERVIEW

The control strategies needed to assure attainment of the PM₁₀ NAAQS focus on control of residential wood combustion, fugitive dust, residential open burning, and wood products emissions. Other strategies include the management of future growth in industrial emissions through the Department's New Source Review Program. Non-industrial strategies are implemented through a comprehensive and cooperative program between state officials and the Town of Lakeview, including local ordinances adopted by the Lakeview Town Council and the Lake County Board of Commissioners. Industrial strategies and some contingency measures are adopted and implemented through Department rules.

It is anticipated that the Lake County Board of Commissioners will authorize the Town of Lakeview to implement and enforce all of the provisions of the town ordinance within the County portion of the Lakeview Urban Growth Boundary.

The Clean Air Act requires that PM₁₀ control strategies include Reasonably Available Control Measures (RACM) for area sources, and Reasonably Available Control Technology (RACT) for industrial point sources that significantly contribute to nonattainment. EPA guidance states that listed RACM/RACT measures must be included in the attainment plan if needed to demonstrate attainment. Otherwise, RACM is to be included in the contingency plan for all significant source categories contributing to PM₁₀ violations. The Lakeview PM₁₀ control strategy (the combination of the attainment strategy and contingency plan) satisfies the RACM/RACT requirements.

Residential Wood Combustion Strategies

The principal means of achieving the needed emission reductions in Lakeview is through a voluntary residential woodburning curtailment program. A strong public education program will also be an essential element of the overall strategy. A minimum compliance rate target of 30% has been set for the voluntary curtailment program. A 30% reduction in wood smoke emissions, in combination with other control measures, is needed on poor ventilation days (worst-case day) to attain the 24-hour NAAQS.

Additional reductions from the replacement of noncertified woodstoves will help achieve attainment of the NAAQS. Lakeview has received a \$200,000 grant from the Oregon Economic Development Department for the replacement of noncertified woodstoves from low and moderate income homes who rely solely or primarily on wood heat. This program will provide long term, permanent emission reductions by allowing as many as 80 high emission noncertified stoves in low and moderate income homes to be replaced with certified cordwood or non-wood heating systems. A 17% reduction in baseline (1992) noncertified stove emissions is expected from the stove removal program. Additional strategies implemented through state rule include a ban on the sale and installation of used, noncertified woodstoves.

The woodheating strategy is implemented through the Lakeview Air Quality Program ordinance and the Department's rules regulating woodstoves.

Fugitive Dust Control Strategies

The Oregon Department of Transportation has committed to coordinate with local public works staff to reduce emissions from wintertime road sanding operations. Reductions will be accomplished by giving priority to the use of cleaner, more durable road sanding material, and increasing the frequency of rapid material clean-up after each snow event. While significant reductions in winter road sanding emissions are expected from these measures, the exact percentage reduction is not readily quantified. Therefore, no formal emission reduction credit has been claimed in the attainment demonstration.

Other dust control measures include mandatory cleanup of trackout from unpaved areas onto state highway right-of-ways, enforced by State Administrative Rule.

Open Burning Control Strategies

The Lakeview program includes restrictions on residential open burning within the nonattainment area. Open burning is generally prohibited at all times within the nonattainment area. Special burning permits are available. Permit conditions specifically prohibit open burning on any Yellow and Red woodsmoke curtailment day. Violation of permit conditions is subject to civil penalty.

Prescribed Forestry Burning: Special Protection Zone

In order to mitigate any impacts on the Lakeview PM₁₀ Nonattainment Area from forest slash burning, the Oregon Smoke Management Plan will be amended to establish a Special Protection Zone (SPZ) for Lakeview. This SPZ would place voluntary restrictions on prescribed burning within 20 miles of the Lakeview nonattainment area boundary. These voluntary restrictions would include: 1) prohibitions on burning if weather forecasts predict smoke impacts on the nonattainment area; 2) the monitoring of burns for at least 3 days for potential smoke impacts; and 3) prohibition on ignition of fires from December 1 to February 15 when "Red" woodburning curtailment days are in effect in the Lakeview area.

Should Lakeview fail to meet the attainment deadline, and slash burning is determined to be a significant contributor to nonattainment, the following contingency measures would be put in place: 1) expansion of the SPZ to include sources of slash burning causing the impact; 2) expansion of the period of burning restrictions by 30 days; 3) prohibitions on all slash burning within the SPZ in December and January if smoke impacts exceed 5-10 $\mu\text{g}/\text{m}^3$ (24-hour average); and 4) prohibition of all slash burning from November 1 to March 1 if an impact greater than 10 $\mu\text{g}/\text{m}^3$ occurs.

Industrial Control Strategies

Analysis of industrial emission impacts in Lakeview indicate that no significant additional emission control is necessary at this time. Receptor and dispersion modeling results of industrial boiler impacts at the reference (highest impact) monitoring site indicate that industrial emissions are not significant in light of the attainment needs of the community. However, as part of the Lakeview Attainment Plan permitted industrial emissions will be reduced through a reduction in the total plant site emission limit of one major facility.

A preliminary evaluation of Reasonably Available Control Technology (RACT) options was conducted for industrial sources in Lakeview, and considered factors such as current permitted industrial emission levels, current and available control technologies, and the cost benefit of additional emission reduction; including the incremental amount of achievable emission reduction, capital and installation costs, and the costs of operation and maintenance (O&M), and the necessity for additional industrial control given the attainment needs of the area. The cost benefit analysis of available emission reduction options indicate control costs of approximately \$2900/ton to \$3,500/ton. These values are above the normal acceptable range for RACT control.

Based on modeling, RACT analysis, and the attainment needs of the community, the Department has concluded that both major industrial sources currently meet the intent of Reasonably Available Control Technology (RACT), given the current technology of the boilers, the cost to upgrade the facilities, the estimated high cost/benefit (\$/ton) of emission reduction, the potential cost to the community from facility closure, and that more stringent emission control is not required at this time.

One major facility has agreed to relinquish emission credits through a revision to their Air Contaminant Discharge Permit, permanently reducing permitted emissions by 70%. While not needed for attainment purposes, additional Reasonably Available Control Measures (RACM) for industrial sources have been added in order to provide additional assurance of overall emission reduction in the community. RACM measures for controlling plant site fugitive dust, and well as requirements for enhanced operation and maintenance, and emission source testing, will provide an extra safety margin for emission reduction at a reasonable cost.

In order to assure that increases from industrial emissions do not jeopardize emission reductions gained from other PM₁₀ control strategies, the Department's New Source Review rules (OAR 340-28-110, and 340-28-1930) were revised. The significant emission rate (trigger for new source review for new or major modified sources) was reduced from 15 to 5 tons per year. Any emission increase of greater than 5 tons/yr must be fully offset at a 1:1 ratio. Emission increases of 15 tons/yr or greater will require Lowest Achievable Emission Rate (LAER) level control.

Contingency Measures

The Clean Air Act Amendments of 1990 requires states to include contingency measures in the PM₁₀ control strategy that can be automatically implemented in the event that the base attainment strategy fails to demonstrate Reasonable Further Progress (RFP) toward attainment, or attainment of the NAAQS by the Clean Air Act deadline. The Reasonable Further Progress (RFP) milestone of April 25, 1998 will require an evaluation of the success achieved in

implementing the primary PM₁₀ control strategy and in reducing emissions. If the Department, in consultation with the Town of Lakeview and the EPA, determines that RFP has not been demonstrated, contingency measures would be implemented.

Contingency measures should achieve emission reductions equal to approximately 25% of the total reduction in actual emissions expected from the primary control strategy. If an area fails to meet RFP contingency measures will be required. If an area fails to meet PM₁₀ standards (attainment) by the specified deadline, the Clean Air Act requires that the area be redesignated as a "serious" nonattainment area, triggering contingency measures, and requiring a revised PM₁₀ control strategy with additional control measures. EPA guidance indicates Best Available Control Measures (BACM) must be included for all significant source categories contributing to PM₁₀ violations. BACM for industrial point sources is referred to as Best Available Control Technology (BACT).

The Lakeview PM₁₀ Control Strategy includes the following contingency measures:

A. Woodburning Controls: The Lakeview Clean Air Ordinance provides for the implementation of a mandatory curtailment program should the area fail to show Reasonable Further Progress by April 25, 1998, or attain the standard by the December 31, 1999 deadline. The mandatory program is designed to achieve a 67% compliance rate.

The state has been granted backup authority to implement a increasingly effective woodburning curtailment program, should a local government fail to implement a required curtailment program of sufficient stringency.

B. Noncertified Stove Removal: The state has authority to require, as a PM₁₀ contingency measure, the removal of noncertified woodstoves in a PM₁₀ nonattainment area upon sale of a home.

C. Prescribed Burning Measures: As a contingency, a mandatory forestry slash burning program would be implemented if slash burning smoke is found to be a significant contributor to PM₁₀ nonattainment.

Strategy Emission Reduction - 24-Hour Worst-case Day

Attainment of the 24-hour NAAQS in 1999 will require a 37% reduction in worst-case day emissions equalling a reduction of 1007 pounds per day. The needed reduction is achieved through the strategy elements listed in the following summary.

Summary of 24-Hour Emission Reductions
To Be Achieved by 1999

<u>Strategy Element</u>	<u>Credit</u>	<u>Emission Reduction</u>
Woodburning Strategies:		
- Woodburning Curtailment	30%	202 Pounds/Day
- Ban on Noncertified Stoves	22%	215 Pounds/Day
- Woodstove Removal Program	17%	88 Pounds/Day
		<hr style="width: 10%; margin-left: auto; margin-right: 0;"/>
Woodstove Strategies, Total		505 Pounds/Day
New Road Deicing Practices	No Credit Taken	
Reduction in Point Source Industrial Strategy	60%	830 Pounds/day
Total reduction from all strategies....		1,342 Pounds/Day
Required emission reduction		1,007 Pounds/Day

Air Quality Standard Maintenance

During the ten year period following attainment of the NAAQS, a net decrease in emissions is projected to occur as a result of attainment strategies and the replacement of older conventional stoves with certified cordwood and non-wood alternatives. The 24-hour NAAQS is projected to be maintained through the year 2009 at which time worst-case day PM₁₀ air quality is projected to be 130.1 µg/m³.

Enforceability

The Clean Air Act requires SIP control strategies to be enforceable. Based on EPA guidance, a voluntary woodstove curtailment program requiring a 30% credit must be based on enforceable measures in order for the SIP to be approved by EPA. Lakeview has adopted a voluntary curtailment program with an objective of achieving a 30% compliance rate by no later than the 1997-98 heating season. The program and compliance assessment provisions of the ordinance will be enforced by the Town of Lakeview. Community participation shall be regularly evaluated through a neighborhood compliance survey program. In the event that local government fails to implement the voluntary curtailment program, the Department has statutory backup authority to implement the program.

The highway road sanding program is implemented through commitments provided by the Oregon Department of Transportation.

Residential open burning restrictions are implemented through the Lakeview ordinance. The voluntary forestry smoke management program is coordinated by the Oregon Department of Forestry.

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4.19.0 State Implementation Plan for Lakeview PM₁₀ Nonattainment Area

4.19.0.1 Introduction

On July 1, 1987, the Environmental Protection Agency promulgated new federal ambient air quality standards for particles less than or equal to 10 micrometers in aerodynamic diameter (PM₁₀) to replace the Total Suspended Particulate (TSP) standard¹. The PM₁₀ standard became effective 30 days later on July 31, 1987. Under requirements of the 1990 Clean Air Act Amendments the EPA classified the Town of Lakeview as a Moderate PM₁₀ nonattainment area on October 25, 1993, (58 FR 49931). Air monitoring has shown that air quality within the Lakeview Urban Growth Boundary (UGB) exceeds the 24-hour PM₁₀ National Ambient Air Quality Standard (NAAQS) of 150 µg/m³.

Section 189 of the Clean Air Act Amendments of 1990 requires states to adopt and submit plans (State Implementation Plans or SIPs) to EPA by not later than 18 months after redesignation to nonattainment (April 25, 1995). The Act allows EPA twelve months to approve or disapprove the plan. The Lakeview plan must provide for attainment of the standard as expeditiously as practicable but no later than December 31, 1999.

The plan has been developed in consultation with officials of the Town of Lakeview and Lake County, the Oregon Department of Transportation, the Oregon Department of Forestry and the US EPA. The plan was prepared in accordance with the regulations and requirements of the Clean Air Act Amendments of 1990 and the US EPA. The Department believes that the PM₁₀ plan can achieve attainment of the NAAQS within the time frame required by the Act.

4.19.0.2 SIP Overview

This revision to the State Implementation Plan (SIP) has six sections. The first (4.19.1) provides a description of PM₁₀ ambient air quality in Lakeview; Section 4.19.2 describes the PM₁₀ air quality problem within the Lakeview Nonattainment Area; Section 4.19.3 describes emission reductions needed to attain the 24-hour NAAQS; Section 4.19.4 describes implementation of the control strategies, Section 4.19.5 describes resource commitments, and Section 4.19.6 discusses public involvement.

¹A micrometer (µm) is a unit of length equal to about 1/25,000 of an inch. For comparison, the thickness of a human hair is about 100 to 200 micrometers.

4.19.0.3 Area Description

The Town of Lakeview is located in south central Oregon at an elevation of 4,800 feet. The area is typified by its semi-arid, high desert climate where average annual rainfall ranges from 12 to 14 inches. The population within the Lakeview UGB is approximately 4,600 (1990 census and Lake County Planning Dept). Approximately 1,849 occupied housing units are located within the Urban Growth Boundary.

Lakeview's eastern and north-eastern boundary is situated against a mountain formation which rises to a height of approximately 6,700 feet. It is bordered on the northwest, west and south by grassland plains which support local agriculture. Lakeview is located in an active geothermal area with several open hot springs within 2 miles of town. Lakeview is geographically isolated from other PM_{10} source areas. The Urban Growth Boundary has been designated as the PM_{10} nonattainment boundary, and encompasses approximately five (5) square miles.

The central business district (CBD) is situated along state highway 395 which runs the length of town from north to south. Residential areas surround the CBD on the north, west, and south. The two largest wood products facilities are both located at the north end of town.

Figure 4.19.0-2 shows the boundaries of the Lakeview Urban Growth Boundary which was adopted as the nonattainment area boundary. The criteria for selection of the UGB as the nonattainment area are as follows:

1. The nonattainment boundary must include the geographical area within which national ambient air quality standards are currently being exceeded. Air monitoring begun in October in 1991 has shown a consistent pattern of maximum concentrations near the Center & M Street monitoring site, extending outward toward the UGB. The PM_{10} levels appear to reflect the emission density of homes (woodstoves) in the area as well as proximity to the main state highway system interchange of HWY 395 and HWY 140.

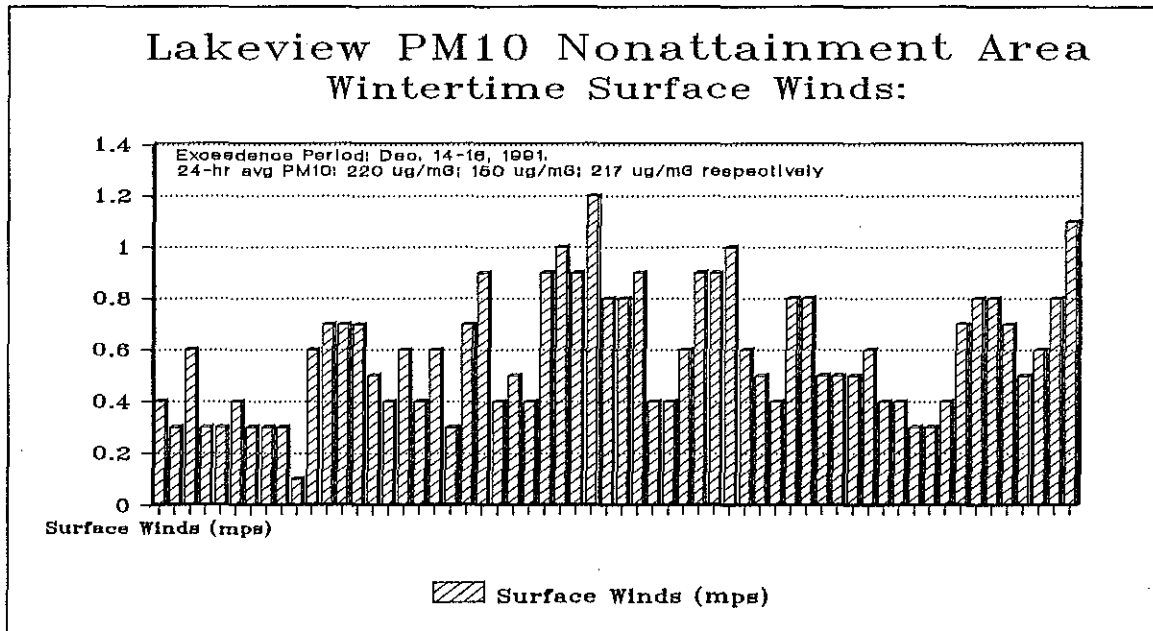
2. The nonattainment boundary must include the area within which air standards may be exceeded in the future. EPA requires that SIP control strategies consider future population, transportation, housing and industrial growth to assure that air standards will be attained and maintained. Development of a strategy to assure maintenance of air standards therefore requires that the nonattainment area boundary be consistent with the regional planning boundary for which community growth projections are available.

3. The nonattainment area must be a legally defined boundary recognized by local governments. Additionally, some components of the control strategy may need to be implemented through county ordinances tied to the Urban Growth Boundary. Designation of the Urban Growth Boundary as the nonattainment area is the only legally defined boundary that meets all of the above criteria.

4.19.0.4 Lakeview Meteorology

Because of its elevation, dry climate and low frequency of cloud cover, Lakeview experiences very strong and shallow night-time radiation inversions which break up with day-time solar heating. In winter-time, arctic air masses frequently invade the Lakeview area and temperatures can remain well below freezing for several weeks at a time. Winter nights can be clear and cool, with hourly wind speeds commonly less than 1 meter per second. Under these conditions, strong temperature inversions occur over the urban area. These inversions are confined and maintained by the mountain range abutting eastern Lakeview, creating an impenetrable barrier to smoke from woodstoves and fireplaces. Figure 4.19.0-1 shows the typical pattern of surface winds during winter exceedance periods.

Figure 4.19.0-1: Lakeview 24-hour Avg. Surface Winds



4.19.0.5 Health Effects of PM₁₀ and Woodsmoke

Particulate matter measuring less than or equal to 10 micrometers is considered a risk to human health due to the body's inability to effectively filter out particles of this size. These particles deeply penetrate and become lodged in the alveolar regions of the respiratory system for days, weeks or even years where they trigger biochemical and morphological changes in the lungs.²

For example, constriction of air passages (i.e., reduced air flow) occurs rapidly upon exposure to PM₁₀. Episodic and continuous exposure aggravates chronic respiratory diseases such as asthma, bronchitis, and emphysema which in turn restrict the lung's ability to transfer oxygen into the bloodstream. Traditionally, children, the elderly, and cigarette smokers are the most susceptible to lung dysfunctions and are therefore at greatest risk from PM₁₀ exposure. Episodic exposure can also cause changes in the activity of the lung's mucous secretions and accelerates the mucociliary action to sweep the particles out of the lungs. This results in increased symptoms of cough, phlegm, and dyspnea (difficulty in breathing). Continuous exposure can inhibit this defense mechanism by introducing new particles into the lungs and redistributing those being swept out. This slows the clearance of the bronchial system thus increasing susceptibility to acute bacterial and viral infections.³

The increased stress on the pulmonary system caused by PM₁₀ exposure is usually tolerable for those with healthy respiratory systems, however, it can lead to irreversible or fatal damage in people already suffering from cardiopulmonary disease, typically children, the elderly, the ill, and cigarette smokers.⁴ Another group that falls into the high risk category are people who breathe through their mouths.⁴ This group includes a wide range of people from chronic mouth-breathers to anyone involved in outdoor exercise and heavy labor. During mouth-breathing, particulate matter is breathed more directly into the lungs since it bypasses the filtering systems of the nasal passages.

²J. Koenig, T.V. Larson, P. Jenkins, D. Calvert, N. Maykut and W. Pierson, "Wood Smoke: Health Effects and Legislation," Health Effects of Woodsmoke, Northwest Center for Occupational Health and Safety, January 20, 1988.

³U.S. Environmental Protection Agency, Second Addendum to Air Quality Criteria for Particulate Matter and Sulfur Oxides (1982: Assessment of Newly Available Health Effects). EPA 600/8-86-020.

Among the sources of PM₁₀ emissions, wood smoke is of particular concern in Lakeview because it accounts for a significant portion of the respirable particulate matter measured in the nonattainment area. A description of emission sources is found in Section 4.19.2.2. These particles are less than 1 μm in diameter and remain suspended in the air for long periods of time. Because of their small size and their ability to remain airborne, they are easily inhaled and lodged in the alveolar region of the lungs. These particles can also act as carriers for toxic chemicals which are transported deep into the respiratory system. Some of these toxics are then absorbed into the bloodstream.

Wood smoke contains at least fourteen carcinogenic compounds including benzo(a)pyrene, benzo(a)anthracene, and other polycyclic organic materials.⁴ Additionally, wood smoke contains several other hazardous compounds such as aldehydes, phenols, carbon monoxide and volatile organic vapors. These compounds can cause or contribute to illness ranging from neurological dysfunctions and headaches to lung cancer.⁵ Many of the components of wood smoke are also found in cigarette smoke and coke oven emissions and can affect the cilia in a similar manner making it difficult for the body to expel the particulate matter. Because wood smoke concentrations are highest in residential areas, a large segment of the population is routinely exposed to wood smoke pollution in the winter months. Additionally, it is those people who are most sensitive (children, the elderly, and the ill) who spend the most time in their homes, thereby increasing their risk.⁵

A study of lung function in 600 grade school children in the City of Klamath Falls, Oregon was conducted by the Oregon Department of Health and the Klamath County Department of Health Services just before, during and immediately following the 1990-91 woodheating season.⁶ Results from the study demonstrated that impaired lung function was associated with elevated levels of PM₁₀ that occurred with woodheating emissions.

⁴P.G. Jenkins, Washington Wood Smoke: Emissions, Impacts and Reduction Strategies, Washington Department of Ecology, Olympia, Washington. December, 1986.

⁵P.G. Jenkins, Washington Wood Smoke: Emissions, Impacts and Reduction Strategies, Washington Department of Ecology, Olympia, Washington. December, 1986.

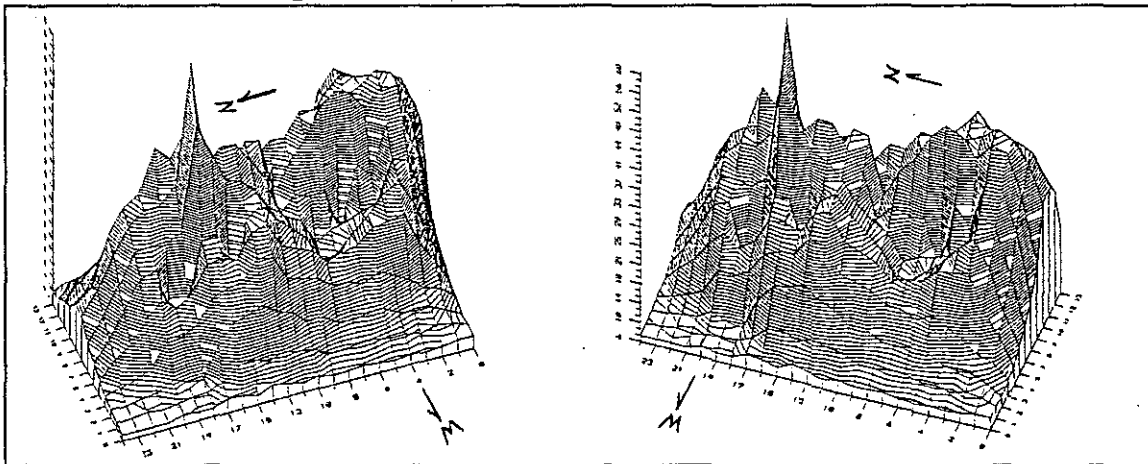
⁶Klamath Falls Lung Function Health Study. State of Oregon Department of Health. June, 1991.

4.19.1 Ambient Air Quality

PM₁₀ air quality monitoring began in Lakeview in October 1991 at Center & M Street, following completion of an area-wide survey designed to characterize the spacial distribution of PM₁₀ concentrations.⁷ Results from the study demonstrated that the Center & M Street monitoring site was representative of the highest levels of PM₁₀ in the airshed. The PM₁₀ concentration contours shown in Figures 4.19.1-1a and 4.19.1-1b were developed from the survey, and show the area of highest concentration located in close proximity to both residential areas, the main highway, and the local wood products industry. Figure 4.19.1-1b also shows the location of the Center & M site.

Air quality monitoring documented three exceedances of the 24-hour NAAQS in 1991 (220 µg/m³ max) and one exceedance in 1992 (155 µg/m³ max), thus exceeding the allowable 1.0 exceedances in a three year period. Based on this monitoring data, the State of Oregon requested redesignation of Lakeview to a Moderate PM₁₀ Nonattainment Area. After EPA review and the opportunity for public comment, redesignation was published in the federal register. Four additional exceedances were measured in 1993. Background air monitoring began in 1993 at the Vernon School site, located approximately two miles southwest of the UGB. Daily Medium Volume sampling is conducted from October through March, and one day in six during the balance of the year. Two additional High Volume samplers have been located at Fremont School and 4th & L Street (Padgett) since October 1993, sampling every sixth day from September through June.

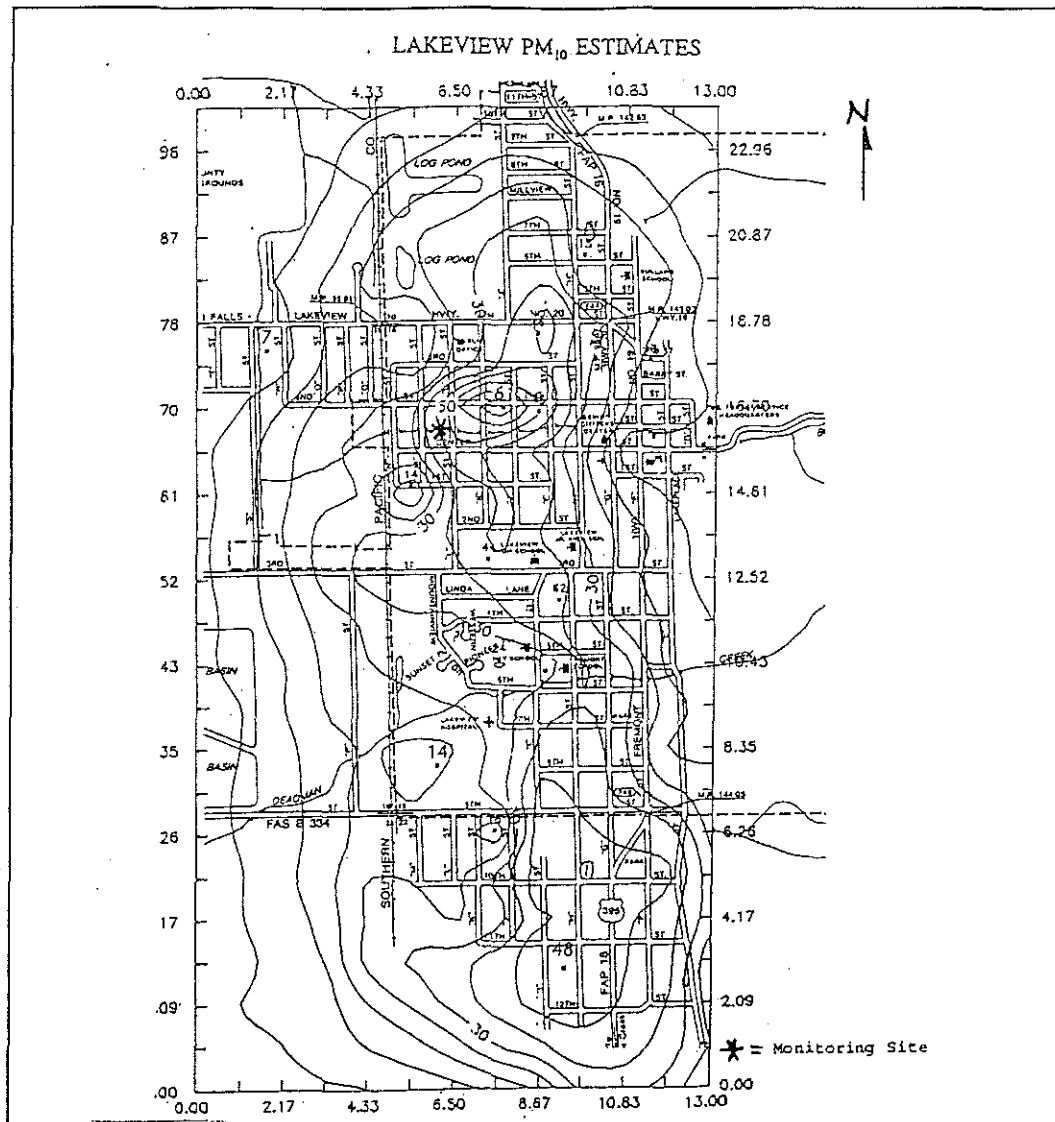
Figure 4.19.1-1a: Spacial Distribution of PM₁₀ Concentrations



⁷Special Study Report: Lakeview PM₁₀ Winter 1990/91.

Report 91-1. Technical Services Section, Air Quality Division, State of Oregon Department of Environmental Quality. April, 1991.

Figure 4.19.1-1b: Spatial Distribution of PM₁₀ Concentrations



4.19.1.1 Air Monitoring Methods

Several sampling methods have been used to estimate and measure PM₁₀ concentrations in Lakeview:

Integrating Nephelometer measurements of light scattering (a surrogate for PM₁₀) have been conducted during the winter months of highest PM₁₀ concentrations at the Center & M site. This method provides hourly light scattering averages which are highly correlated to PM₁₀ concentrations measured using the Medium volume samplers equipped with size selective inlets.

The PM₁₀ Medium-Vol. sampler collects PM₁₀ aerosol using a 12 port, 47 mm filter sequencing system that is programmed to collect 24-hour samples. The sampler pulls ambient air at a 4 CFM flow rate through a 10 μm Sierra-Anderson 254 inlet providing a PM₁₀ cut point. A dual-port system capable simultaneously collecting aerosol on both Teflon and quartz filter substrate is used to allow complete chemical analysis for Chemical Mass Balance receptor modeling purposes. Because of the excellent agreement between PM₁₀ concentrations measured by the Medium-Vol and the HV-SSI reference method, EPA has designated the Medium-Vol sampler as an acceptable equivalent method.

All of the data discussed herein was collected at the Center & M Street site. Table 4.19.1-1 lists monitoring data collection periods by measurement method.

**Table 4.19.1-1: Data Collection Periods by Method
Center & M Street**

Measurement Method	Began	Daily Sampling Terminate	One in Six Day Sampling
Integrating Nephelometer (Light Scattering or Bscat)	Oct. 01, 1991	Mar. 31, 1992	
	Oct. 01, 1992	Mar. 31, 1993	
	Oct. 01, 1992	Mar. 31, 1994	
	Ongoing		
PM ₁₀ Medium-Vol. (MV) * Center & M Site	Oct. 01, 1991	Mar. 31, 1992	April-Sept
	Oct. 01, 1992	Mar. 31, 1993	April-Sept
	Oct. 01, 1993	Mar. 31, 1994	April-Sept
	Ongoing		
PM ₁₀ Medium-Vol. (MV) * Vernon School Site (Background Site)	Oct. 01, 1993	March 31, 1994	April-Sept
PM ₁₀ HV-SSI (SSI) (Every 6th Day) 4th & "L" St.	Sep. 01, 1993	Ongoing	
PM ₁₀ HV-SSI (SSI) (Every 6th Day) Fremont School.	Sep. 01, 1993	Discontinued April 1, 1994	

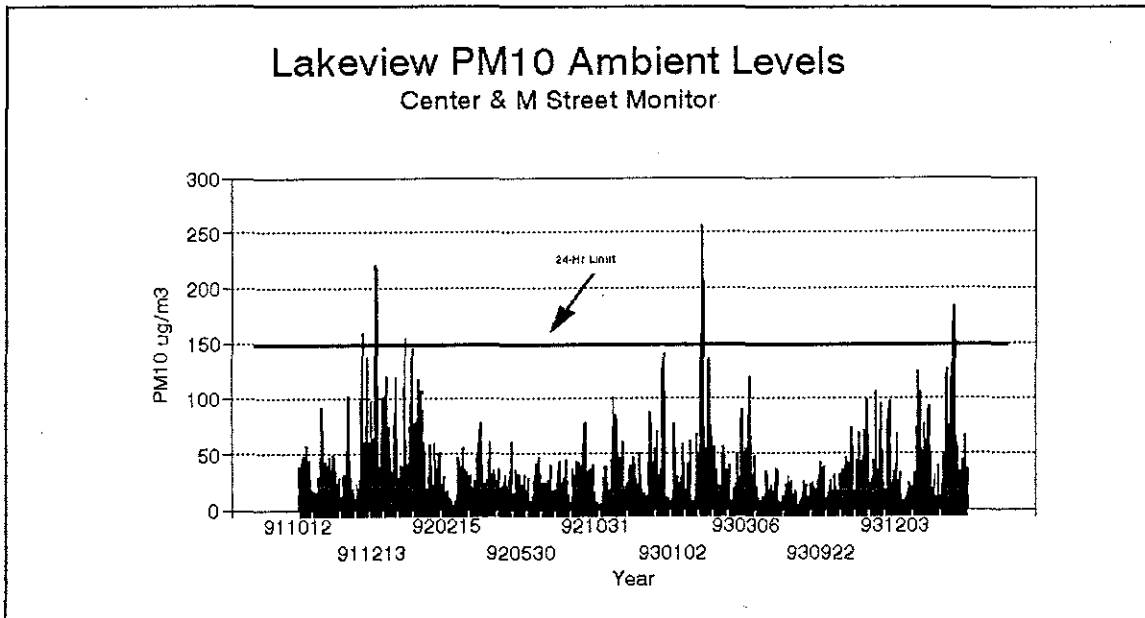
* Both Teflon and quartz filter substrate are used.

** Center & M Street and Vernon school sites sample daily October-March, then sixth day sampling for the balance of the year. The Padgett site samples on a one in six schedule.

4.19.1.2 PM₁₀ Air Quality in Lakeview

Figure 4.19.1-2 illustrates the seasonal variations in PM₁₀ concentrations in Lakeview. As seen in the Figure, the highest 24-hour concentrations occur during the winter space heating season when PM₁₀ concentrations at the Center & M site have reached levels as high as 256 µg/m³. Peak 24-hour concentrations at the Center & M Street site decrease dramatically during the spring months and reach an average low of about 17 µg/m³ during the summer months. Concentrations then raise again in the fall months as woodstove use increases and atmospheric dispersion decreases.

Figure 4.19.1-2: Lakeview Seasonal Variation in PM₁₀ Concentration



Review of PM₁₀ Concentrations

The four highest concentrations of PM₁₀ mass measured in Lakeview during the past three (3) years are listed in Table 4.19.1-2, below.

Table 4.19.1-2: PM₁₀ Maximum Concentrations, 24-hour Averages

	µg/m ³	Date	Method
Highest Value	256	931227	Medium-Vol
Second High	220	921214	Medium-Vol
Third High	218	930126	Medium-Vol
Fourth High	217	911216	Medium-Vol

Note: Table 4.19.1-3 summarizes PM₁₀ monitoring data for the April 1991 to March 1994 period over which the design values were calculated. Appendix 1 contains a tabulation of daily PM₁₀ concentrations over the period of October 1, 1991 to December 31, 1994.

Table 4.19.1-3: Summary PM₁₀ Data (µg/m³)

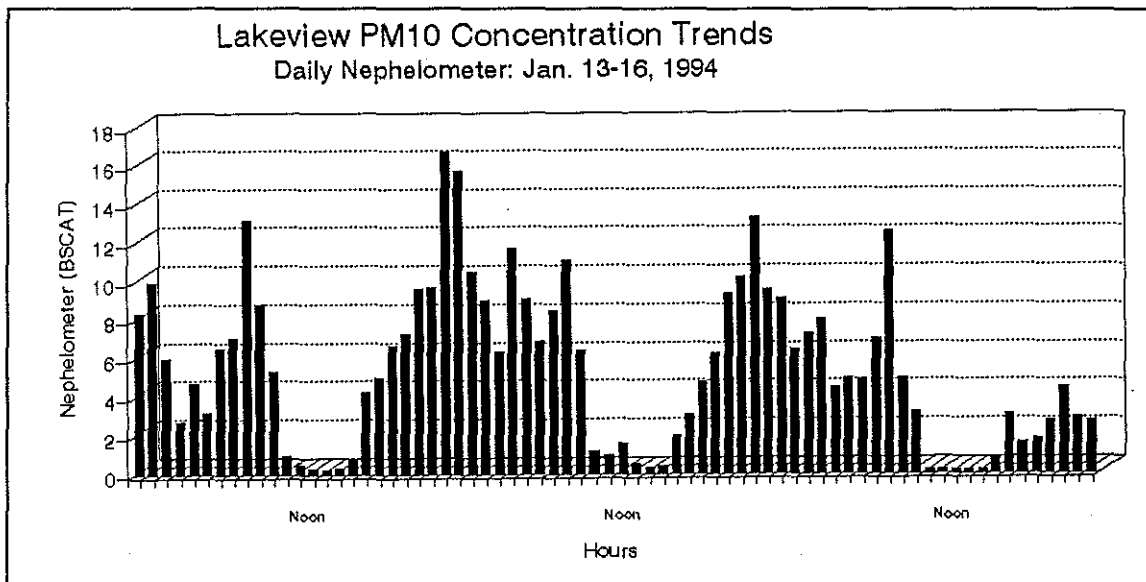
	All Data	1991	1992	1993	1994
No. Days Samples	517	79	225	213	208
Arithmetic Mean †	-----	Na	32	33	33
Maximum Value	-----	220	155	256	184
Second High	-----	217	145	218	168
No. Days >150	8	3	1	4	2

† Annual average values computed as prescribed in 40CFR52 Appendix K.

Hourly Variability

Hourly variations in PM₁₀ levels on worst-case winter days can be seen in the diurnal variations of light scattering measurements from the Center & M site (Figure 4.19.1-3). Particulate concentrations begin increasing from a mid-day low, peak during the 11 PM to 1 AM period and then steadily decrease until 8-9 AM at which time the levels again reach mid-day concentrations. The early morning peak at 6 AM is believed to be associated with early morning woodstove start up by Lakeview residents.

Figure 4.19.1-3: Diurnal Variations of Estimated PM₁₀



Worst-case Day Characteristics

During the October 1991 to December 1993 period, the 24-hour NAAQS was exceeded an average of 2.7 days per year, exclusively during the months of late October to March. During these periods, residential woodheating reaches its peak and atmospheric dispersion is at its poorest. Worst-case winter days typically have daily average temperatures of 10 °F (55 degree heating days), snow cover, extremely shallow temperature inversions and extended periods of calm winds. These conditions occur during periods when snow producing storm systems are followed by stable high pressure systems.

Annual Average

An attainment demonstration based on the annual NAAQS has not been included in this plan. Annual average values for Lakeview have been consistently 34%-37% below the annual NAAQS of 50 $\mu\text{g}/\text{m}^3$. The following is a summary of annual average values since the inception of sampling in October 1991.

<u>Year</u>	<u>Arithmetic Mean</u>	<u># of Exceedance Days</u>	<u>Maximum Value ($\mu\text{g}/\text{m}^3$)</u>
1992	31.7 $\mu\text{g}/\text{m}^3$	1	155 (12/14)
1993	31.2 $\mu\text{g}/\text{m}^3$	4	256 (01/27)
1994	33.0 $\mu\text{g}/\text{m}^3$	2	184 (01/19)

It is anticipated that Lakeview's annual average will continue to stay well below the standard in future years.

Impacts from Sources External to the Urban Growth Boundary

The Lakeview Nonattainment Area is geographically isolated from other PM_{10} source areas. The surrounding area continues to experience the effect of prolonged drought, exposing the dry lake beds of Goose and Summer Lake. Local agricultural practices include the fertilization of alfalfa fields during the spring and summer months. Wind blown dust may occasionally impact the nonattainment area during periods of high wind conditions, however, all exceedances of the NAAQS have been limited to the winter heating season. No recent smoke intrusions from forest slash burning have been documented in the nonattainment area. The Department of Forestry estimates that over the past seven years only 3-4 percent of the average annual burning in the Fremont National Forest occurs within close proximity to the nonattainment area during the potential wintertime exceedance period.

Special Protection Zone (SPZ): Forestry Prescribed Burning

In order to mitigate any impacts on the Lakeview PM₁₀ Nonattainment Area from forest slash burning, the Oregon Smoke Management Plan will be amended to establish a Special Protection Zone (SPZ) for Lakeview. This SPZ would place voluntary restrictions on prescribed burning within 20 miles of the Lakeview nonattainment area boundary. These voluntary restrictions would include: 1) prohibitions on burning if weather forecasts predict smoke impacts on the nonattainment area; 2) the monitoring of burns for at least 3 days for potential smoke impacts; and 3) prohibition on ignition of fires from December 1 to February 15 when "Red" woodburning curtailment days are in effect in the Lakeview area.

Should Lakeview fail to meet the attainment deadline, and slash burning is determined to be a significant contributor to nonattainment, following contingency measures would be put in place: 1) expansion of the SPZ to include sources of slash burning causing the impact; 2) expansion of the period of burning restrictions by 30 days; 3) prohibitions on all slash burning within the SPZ in December and January if smoke impacts exceed 5-10 $\mu\text{g}/\text{m}^3$ (24-hour average); and 4) prohibition of all slash burning from November 1 to March 1 if an impact greater than 10 $\mu\text{g}/\text{m}^3$ occurs.

Background Air Quality

PM₁₀ aerosols from sources external to the UGB collectively contribute to background air quality. It is important to quantify the worst-case day background since this component of the total PM₁₀ mass loading measured within the UGB is often not subject to the provisions of the nonattainment area control strategy. As a result, air quality improvements must be achieved by reducing emissions from those sources that contribute to the locally-generated component of the aerosol.

The closest background monitoring site is located at Vernon School (elevation 4,800 ft) two miles west-southwest of Lakeview. The Vernon School background data during worst-case winter days is representative of the Lakeview UGB for the following reasons:

1. The site is located in a remote area not significantly influenced by sources within the Lakeview UGB, and is representative of the regional air mass.
2. PM₁₀ concentrations at any background site are typically much lower than corresponding concentrations within the nonattainment area, because they are not influenced by emission sources impacting the nonattainment area. For Lakeview, a worst-case winter day background concentration of 8.3 $\mu\text{g}/\text{m}^3$ is consistent with that characteristics of background air quality

considering that both annual average and worst-case day concentrations are well below corresponding levels within the nonattainment area, the Vernon School site is isolated from emission sources affecting the nonattainment area, that stagnant wind and inversion conditions limit possible emission transport from the nonattainment area to the background site, and that snow cover or low wind speed conditions limit windblown fugitive dust impacts.

One full year of PM_{10} data was available for the background site (Vernon School) on October 3, 1994. The annual arithmetic average, taking into account all available data to date, is $8.4 \mu\text{g}/\text{m}^3$, while the average winter PM_{10} season (October-March) observation was $7.5 \mu\text{g}/\text{m}^3$. Comparison of the annual and PM_{10} season averages indicates a very stable background value. The maximum observed values of ($38 \mu\text{g}/\text{m}^3$) occurred on February 11, 1994 and again on February 24, 1994. Consistently low background levels suggest that the minor sources contributing to background PM_{10} concentrations are both regional and local in nature, and that the site is not impacted by significant emission sources within the nonattainment area.

The average of background PM_{10} concentrations which correspond to exceedance days at the Center & M Street site is $8.3 \mu\text{g}/\text{m}^3$. This value, taken as representative of background air quality during worst-case day exceedance periods, was used in the 24-hour winter worst-case control strategy calculations.

Aerosol Chemistry

On average, the exceedance day PM_{10} aerosol is composed of organic carbon (41%), elemental carbon or soot (6%), crustal elements (3%), other trace elements (2%) and secondary sulfate and nitrates (4%). The balance is associated oxygen, hydrogen, water and ammonium. The winter season aerosol is chemically very similar to the composition of woodsmoke with small amounts of soil elements. While much lower in magnitude than the typical winter time PM_{10} mass loading, the summer time aerosol also contains significant amounts of organic carbon (average 57%), as well as the crustal elements of Al, Si, Ca and Fe (average 35%).

4.19.2 Nonattainment Area Analysis

This section describes the Department's analysis of PM₁₀ air quality in Lakeview as it relates to the National Ambient Air Quality Standards. Source contributions to the airshed's PM₁₀ air quality are discussed both in terms of emission strengths and source contributions to air quality as measured at the Center & M Street site.

4.19.2.1 Design Value Determination (24-hour Basis)

Attainment of the National Ambient Air Quality Standard (NAAQS) for PM₁₀ requires that a control strategy be adopted which will reduce ambient concentrations from the 1992 design value to a level below the NAAQS by the Clean Air Act deadline (1999). Specifically that the expected number of exceedances of the 24-hour NAAQS (150 µg/m³), averaged over a consecutive three year period, be not more than 1.0 per year.

The EPA PM₁₀ Development Guidelines specify that the preferred approach for estimating a design value is through the use of an applicable dispersion model corroborated by receptor models.⁸ If there is no applicable dispersion model and at least one complete year of PM₁₀ data is available, then measured PM₁₀ data should be used to estimate the design value. Three separate design values were determined using measured PM₁₀ data and EPA recommended statistical techniques. The calculations were conducted using the Table Look-Up, Graphical Estimation, and Conditional Probability (Upper 10% Tail) methods.

Dispersion modeling was not used to estimate the design value demonstration for the following reasons:

- Upper air data would be required for dispersion modeling of the design value. Although upper air data is available from the Medford area, 130 miles to the west, the high elevation of Lakeview would likely cause temperature lapse rates near the surface to be much different than Medford. No other upper air data is available. Delays caused by the necessity to collect the several years of MET data needed to support a dispersion modeling effort discourage the use of dispersion modeling.

⁸PM₁₀ SIP Development Guidelines. US Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, N.C. June, 1987. EPA-450/2-86-001.

- The intense and shallow inversions with the associated calm winds that typify Lakeview winter worst-case day conditions are not completely compatible with currently available dispersion models.

In lieu of dispersion modeling, EPA specifies that the 24-hour design concentration should be estimated using the empirical frequency distribution for the largest available data base. The 24-hour design concentrations must then be adjusted to compensate for emission changes that will occur as a result of emission growth and control strategy affects likely to occur by 1999, the year in which attainment must be demonstrated.

The current design value is based on a 3-year PM₁₀ data record (1094 data points) from 1991-1994 using actual and estimated PM₁₀ values. The data record contains daily sampling from October through March and prorated one in six day sampling for April through September. The data record contains 357 (1/6) data points, the highest of which was 46 ug/m³. The record also includes eight PM₁₀ values estimated by nephelometer. The regression correlation in Lakeview between PM₁₀ and neph is 0.96. The following priority order was used in data treatment. First, actual daily PM₁₀ data from the Medium-Volume sequential sampler, then nephelometer data adjusted to Medium-Volume equivalent using reduced major axis (two-way) regression, then prorated one in six day sampling.

This approach (1) provides a design value that is consistent with the measurement method that the Department will be using to determine NAAQS attainment and (2) assures that future receptor modeling analysis of PM₁₀ source contributions are consistent with control strategy design considerations. This approach is described further in Appendix 2.

Table 4.19.2-1: Design Values Summary

24-Hour Design Value, Table Look Up Procedure	217 $\mu\text{g}/\text{m}^3$
24-Hour Design Value, Upper 10% Tail Procedure	201 $\mu\text{g}/\text{m}^3$
24-Hour Design Value, Graphical Estimation	198 $\mu\text{g}/\text{m}^3$

For the Lakeview attainment demonstration, the most conservative (most protective of air quality) design value of 217 $\mu\text{g}/\text{m}^3$ was chosen.

Both the Upper 10% Tail and Graphical Estimation Methods described by EPA provide the most complete and comprehensive evaluation of all monitoring data and it's influence on the theoretical design value. The Upper 10% Tail provides the more conservative estimate of the two statistical methods. The statistical approach is also consistent with the approach used in other Oregon PM₁₀ attainment plans. According to EPA guidance, the

Table-Look Up procedure overestimates the theoretical design value, but will be used in the Lakeview Plan as a conservative, and therefore protective, estimate. In light of the stable design value estimates produced by all three methods, a high degree of confidence can be assumed for this design value.

4.19.2.2 Emission Inventory

Introduction

Emission inventories provide information on the relative strength of sources within an airshed and provide a basis for control strategy evaluation. In addition, emission inventories provide a basis for tracking emission reductions and growth. PM_{10} emissions (usually expressed in tons of particulate per year (TPY), or pounds per day (lbs/day) are calculated from emission factors and source activity records. Emission factors are the weight of pollutant emitted per unit weight of material processed such as grams of PM_{10} emitted per pound of cordwood burned; pounds of road dust emitted per vehicle mile driven or pounds of particulate emitted per ton of hogged fuel burned in a boiler. Emission factors used in this analysis are taken principally from the Environmental Protection Agency's compilation of emission factors AP-42.⁹

Source activity information on the amount of cordwood burned by residents, vehicle miles driven or hog fuel burned are obtained from a variety of sources including industrial air contaminant discharge permits, public mail surveys and data gathered from other government agencies.

Estimation of seasonal or worst-case day PM_{10} emissions requires the development of a source operating schedule which describes the percent of annual emission that occur during specific seasons, months or 24-hour periods.

⁹Compilation of Emission Factors, U.S. Environmental Protection Agency AP-42 Fourth Edition and subsequent supplements. US EPA Office of Air Quality Planning and Standards. Research Triangle Park, N.C. 27711.

BASE YEAR EMISSION INVENTORY

Annual Inventory

PM₁₀ emissions for the 1992 base year within the Urban Growth Boundary (UGB) were estimated for industrial sources, residential heating (gas, oil and wood), commercial space heating, residential open burning, paved and unpaved roads dust, as well as transportation sources (cars, trucks, and railroads). The basis of the emission estimates for the most significant sources are described in the following pages:

Industrial Sources: 52 TPY PM₁₀. These emissions are principally from the wood products industry wood-fired boilers and material handling systems. Five point sources, all wood products companies, are included in the inventory. The largest source emits 25 tons per year of PM₁₀. The 1992 annual and daily emissions are those that actually occurred during the year.

Residential Woodheating: 64 TPY PM₁₀. Information obtained from the Department's 1992/93 woodheating survey¹⁰ and local planning staff indicate that 1,849¹¹ occupied housing units are located within the UGB and that 66% of the population burn wood in some capacity in their homes.

The 1992/93 woodheating survey indicates that, on average, residents burn 3.1 cords/year of firewood in their woodstoves and 1.8 cords/year in fireplaces. An emission rate of 30.6 pounds of PM₁₀ emitted per ton of wood burned was used to estimate 36.5 tons/yr of PM₁₀ from noncertified woodstoves. An emission rate of 20.4 lbs/ton for catalytic and 19.6 lbs/ton for non-catalytic were used to estimate 20.8 tons/yr of PM₁₀ emissions from certified stoves. Approximately 0.5 TPY PM₁₀ was estimated from pelletstoves. Fireplace emissions, at an average rate of 34.6 pounds per ton of wood burned, produced 6 tons per year, for a total woodheating inventory of 64 tons per year PM₁₀. Based on the survey, 37% of the population use wood as their main source of heat, while 22% use wood as a backup source. Of those using wood, approximately 58% use a noncertified woodheating device. It is estimated that wood is the only source of heat in 2-5% of Lakeview homes.

¹⁰Oregon Wood Heating Survey: State of Oregon Department of Environmental Quality, Air Quality Division. October, 1994.

¹¹ Personal contact with Lakeview County Planning Department August, 1994.

Backyard and Forestry Burning: 3 TPY PM₁₀. It is estimated that approximately 328 tons of backyard debris are burned each year generating 2.6 TPY of PM₁₀. This estimate assumes that 179 pounds of combustible material (principally yard debris) is burned per person each year during the months of October through April. Each ton of debris burned is assumed to emit an average 16 pounds of PM₁₀ particulate.

Prescribed burning occurs within Fremont National Forest. Forestry records show that 26,095 and 10,519 tons of slash material were burned in November and December 1992 respectively within Lake County. Lake County encompasses 8,359 square miles, and occasional burning occurs within close proximity to the Lakeview UGB. It is estimated that a small portion of County wide slash burning emissions impact the Lakeview nonattainment area, and were estimated at 0.5 TPY for the UGB. Typically no prescribed burning is conducted in Lake County during the January through March exceedance period. No actual smoke intrusions from slash burning have been documented in Lakeview.

Fugitive Dust Emissions: 28 TPY PM₁₀. The principal source of dust within the UGB on an annual and daily basis is paved road dust (28 TPY) and emissions from winter road sanding (6 lbs/day). Paved road dust estimates are based on a 1992 estimate of 23,287 vehicles miles per day and a calculated PM₁₀ emission factor of 0.0065 lbs/VMT.

Transportation Sources: 3 TPY PM₁₀. Highway vehicles (autos and trucks) emit 1.4 TPY PM₁₀ in tailpipe and tire wear particulate; off-highway vehicles, railroad diesel engines, and aircraft emissions account for approximately 1.3 TPY.

Table 4.19.2-2 and Figure 4.19.2-2 summarize annual PM₁₀ emissions within the UGB.

Table 4.19.2-2: 1992 UGB Annual Emission Inventory

Source	Tons/Year PM ₁₀	Percent
Industry	52	34 %
Residential Woodburning	64	42 %
Solid Waste Disposal	3	2 %
Fugitive Dust	28	19 %
Transportation	3	2 %
Other Sources	1	<1 %
Totals	151	100 %

24-Hour Worst-Case Day Inventory

Development of an inventory representative of emissions during 24-hour periods when PM_{10} ambient air concentrations reach their highest levels in the winter season is important to understanding the sources that cause exceedances during this period. The relative proportion of emissions during the winter season is expected to be quite different than those reflected in the annual emission inventory because some sources (forestry slash) are not active during this period, while others (such as residential woodheating) are much stronger.

The 24-hour worst-case inventory for the UGB is based on the following information and assumptions:

Industrial Sources: 335 lbs/day PM_{10} . The 1992 baseline worst-case day industrial emissions are based on actual emissions in the base year period. Projected future worst-case day industrial emissions are based on permitted emissions, as the hourly Plant Site Emission Limit (PSEL) in pounds/hour over 24-hours, including any banked emission credits. All permitted emissions are considered in the worst-case day scenario when determining attainment. Projected future year worst-case day point source emissions, at their maximum permitted level, are 1385 lbs/day. Actual worst-case day point source emissions for the 1992 base year period were 335 lbs/day.

Transportation: 21.4 lbs/day PM_{10} For purposes of the Lakeview emission inventory, annual transportation emissions are assumed to be evenly distributed throughout the year, and are apportioned for the worst-case day inventory at 21.4 lbs/day. Limited information is available on the actual seasonal variability of vehicle traffic.

Residential Woodburning: 928 lbs/day PM_{10} These emissions are assumed to be proportional to the coolness of the weather as reflected in the heating degree day statistic tabulated by the National Weather Service. During the period from October, 1992 to October, 1993, the coldest day (January 26, 1993 @ $218 \mu\text{g}/\text{m}^3$) had 53 heating degree days (HDD). The average exceedance day has an average Heating Degree Day value of 43 HDD. The worst-case day woodheating inventory, based on a 53 HDD heat demand, is estimated at 928 lbs/day of PM_{10} .

Winter Road Sanding/Fugitive Dust: 184 lbs/day PM_{10} These emissions peak during periods when several inches of snow covers the area. Typically during these periods, up to 11 cubic yards per day of aggregate are spread on roads within the UGB. Chemical analysis of PM_{10} samples

collected on the highest six days exceeding the 24-hour NAAQS indicated that 3-16% (average 6.6%) of the PM₁₀ mass was soil dust. Emission inventory estimates of road sanding, paved and unpaved road dust emissions (184 lbs/day, 11% of daily EI) provide reasonable agreement with the CMB estimates of worst-case day emissions.

Soil dust emissions for the attainment demonstration were based on chemical mass balance analysis of PM₁₀ samples (6% of total worst-case day contribution), not on the basis of emission factors. This was done for several reasons:

(1) The CMB model can very accurately apportion soil dust impacts on actual worst-case days. Even with the best possible emission factors, estimates of fugitive emissions are highly uncertain;

(2) Paved road dust emission factors are not entirely appropriate since road surfaces are often covered with packed snow;

(3) Specific silt loading factors for Lakeview roadways are not available.

Table 4.19.2-3: 24-Hour Worst-case Emission Inventory

Source	1992 Base Year Period. Pounds/day PM ₁₀	Percent
Industry	335	21 %
Residential Woodburning	929	58 %
Fugitive Dust	184	11 %
Transportation	22	1 %
Other Sources	139	9 %
Totals	1609	100 %

The "Other" source category includes emission from structural fires, non-wood residential heating fuels, etc. Appendix 3: Detailed Emission Inventory, provides a detailed annual and worst-case 24-hour emission inventory listing.

Growth Factors

PM₁₀ emission growth factors are used to estimate future year emission inventories and source category impacts. Key indicators used to estimate future emissions include population growth, increases in transportation (vehicle miles traveled) and Plant Site Emission Limits (PSEs) for industrial sources.

Transportation Growth, Future average daily traffic growth in Lakeview is estimated at approximately 1.4%/year. Best fit regression analysis projects total average ADT (Average Daily

Traffic) growth from 1992 to 1999 (compounded growth) at +7.25%¹²

Population Growth: The number of people living within the Lakeview Urban Growth Boundary has declined in recent years; however the population has now stabilized. Lake County projections for maximum potential population growth to 1999 is estimated at 1.6%/yr.¹³ A more reasonable estimate of actual population growth is in the 1.0%-1.4%/yr range, being consistent with historic population trends, economic forecasts for major industry in the area, and the Department of Transportation estimate of ADT to 1999. Using 1.0% per year this would result in population growth from 4,600 to 4,922 by 1999.

Residential Woodburning: The use of residential woodheating devices could be expected to grow at a maximum of approximately 0.9%/yr by 1999 as stoves are installed in new housing. The 0.9 percent growth rate is based on maximum potential population growth rate (1.6%/yr) and woodheating survey results which show that approximately 59% of the population burn wood as a primary or secondary heating source ($1.6\% \times 59\% = 0.9\%/yr$). Considering growth factors for population, and the net emission growth from new residential woodheating systems (without any emission reduction strategies), Residential Wood Combustion (RWC) emissions could be expected to grow by a total of +7% in 1999.

Future net woodstove emissions are expected to decrease by at least 3% per year (a total of 22% by 1999) as a result of natural attrition in noncertified stoves to alternative non-wood heating sources. Emission reductions from these projections are explicitly accounted for in the Section 4.19.3.2, Evaluation of Potential Control Measures. Fireplace emissions are expected to decrease by approximately 1.8%/yr.¹⁴

Industrial Emission Growth: For the purposes of demonstrating future attainment under worst-case day conditions, industrial emissions have been projected to increase to the maximum permitted levels allowed under their Plant Site Emission Limits (PSELs). This represents a 313% increase from 1992 baseline actual emission levels. Maximum daily values are calculated using the hourly permitted emissions. Actual emissions are expected to continue at or below current levels due to reductions in the timber supply from public lands.

¹²State of Oregon Department of Transportation Highway Division, Systems Studies Unit estimate. September 23, 1994.

¹³Personal conversation with Lake County Planning Department, September 1994.

¹⁴Wood Fuel Use Projection Study, Del Green Associates, Inc. January 1982.

Other Emissions: The "Other" emission category includes structural fires, residential incineration, and secondary aerosols, and is projected to increase at approximately 1.0%/yr for a total of 151 lbs/day.

Projected Emissions, 1992 to 1999

The 1992 24-hour emission and design value estimates must be adjusted to account for emission growth or decreases that may occur within the airshed during the seven year period of 1992-1999. Estimates are based on the emission growth factors described above. The information presented in Table 4.19.2-4 provides a basis for the future year source impact estimates (Section 4.19.3.1) which, in turn, provide the basis for the control strategy analysis.

Table 4.19.2-4: 1999 Estimated Emissions
(With No Strategies Applied)
-24-Hr Worst-case-
1999

Source Category	Pounds/day	%
Industry	1385	51 %
Residential Woodburning	975	36 %
Fugitive Dust	198	7 %
Transportation	23	1 %
Other	151	5 %
Totals	2732	100 %

The 1999 uncontrolled Residential Woodburning category includes the net effect of woodstove emissions increased by 7% and fireplace emissions decreased by 12.6%.

Table 4.19.2-5: 1999 Estimated Emissions
(With Strategies Applied)
-24-Hr Worst-case-
1999

Source Category	Pounds/day	%
Industry	556	40 %
Residential Woodburning	471	34 %
Fugitive Dust	198	14 %
Transportation	23	2 %
Other	142	10 %
Totals	1390	100 %

Projected Emissions Beyond 1999

Analysis of the ability of the attainment strategies to maintain the NAAQS during the period 1999 to the year 2009 requires development of a third set of emission estimates. The growth rates assumed for the maintenance analysis are based on the 1999 inventory adjusted to reflect the attainment strategy emission reductions:

- Average population growth rate of 1.0%-1.2% per year will continue to be used as an estimate of residential oil, gas, residential open burning, and structural fires growth;
- Transportation growth rate of 1.4% per year will continue to be used for transportation sources and paved, unpaved and construction dust as well as street sanding emissions;
- Industrial emissions are kept constant at the new PSEL levels shown in the 1999 emission inventory;

The projected residential wood combustion emissions, following application of a 0.9% per year growth rate, were adjusted to reflect emission reduction credits associated with the ban on the sale and installation of used noncertified stoves, and the natural attrition in noncertified stoves for non-wood heating systems, as documented by the Lake County Planning Department. State Building Code prohibits the installation of noncertified woodstoves, both in new construction and as a heating system replacement. Therefore, all new installations of residential heating devices will either be certified woodstoves or non-wood heating systems. Some minor growth in pelletstove use may also occur.

Projected 24-hour worst-case emissions during 1999 to the year 2009 (assuming that all control strategy elements are implemented) are listed in Table 4.19.2-6. If all of the strategy elements are applied, the year 2009 24-hour projected emissions will be reduced from 1992 levels by 129 pounds per day through the implementation of curtailment; the used woodstove ban and woodstove replacement programs, open burning and fugitive dust control programs.

**Table 4.19.2-6: 1999 to Year 2009 24-Hour Worst-case Emissions
With All Strategies Implemented
(Pounds Per Day)**

Source Category	1999	2003	2006	2009
Industry	556	556	556	556
Residential Woodburning	471	490	504	518
Fugitive Dust	198	209	217	225
Solid Waste Disposal	8	8	8	8
Transportation	23	24	25	26
Other	134	140	144	148
Totals	1390	1427	1454	1481

4.19.2.3 Transportation Conformity - Motor Vehicle Emission Budget

Transportation air quality conformity is a quantitative analysis intended to ensure that federal transportation systems and projects will not undermine a state's strategy to attain and maintain air quality standards. This section establishes a specific motor vehicle emissions budget for the Lakeview PM₁₀ Nonattainment Area to be used for conformity purposes. The Fugitive Dust and Transportation source categories contain transportation related emissions for the Lakeview Nonattainment Area. These emissions have been estimated for the 1992 base year and projected forward for both the 1999 attainment year and the 2009 (10 year) maintenance milestone. These emission estimates are established as the transportation emissions budget. The transportation emission budget exists as a cap on expected future transportation emissions. New emissions associated with the construction in Lakeview of regionally significant transportation projects subject to Oregon's Transportation Conformity Rule must remain within the established budget.

The 1999 Lakeview Worst-Case Day Emission Inventory (with strategies applied) contains a "Safety Margin" of 335 lbs/day. To allow for the possibility of unanticipated growth, 5% of the available 1999 attainment safety margin has been allocated to the transportation emission budget.

Transportation emission budgets have been established for the following years. The budget includes paved and unpaved road dust, road sanding, and mobile emissions, as well as 5% of the available 1999 attainment safety margin.

<u>YEAR</u>	<u>MILESTONE</u>	<u>BUDGET</u>
1998	Reasonable Further Progress	234 lbs/day
1999	Attainment of NAAQS	238 lbs/day
2009	10 Year Maintenance Milestone	268 lbs/day

Transportation emissions have been estimated using VMT projections published by the Oregon Department of Transportation (ODOT), and include growth projections provided by the ODOT Systems Studies Unit. Estimated growth factors are included in Section 4.19.2.2. Emission factors were estimated by the DEQ Technical Services Section for paved and unpaved road dust, as well as winter road sanding and tail pipe emissions. On and Off-road mobile emissions were estimated by EPA Mobile Source Emission Model 5A. All estimates reflect emissions within the Lakeview Nonattainment Area boundary (UGB). Below is a summary of transportation emission assumptions for major dust source categories:

<u>SOURCE CATEGORY</u>	<u>ESTIMATED DAILY VEHICLE MILES TRAVELED</u>	<u>PM₁₀ EMISSION FACTOR</u>
PAVED ROADS	23,287	0.0065 lbs/VMT
UNPAVED ROADS	194	0.0950 lbs/VMT

For conformity purposes, additional emission estimate information may be obtained from the Department's Technical Services Section (Detailed Emission Inventory for Lakeview PM₁₀ Nonattainment Area).

4.19.2.4 Source Contributions to PM₁₀

Development of strategies designed to attain and maintain the PM₁₀ NAAQS requires an accurate knowledge of contributions that sources make to the measured PM₁₀ aerosol mass. Three approaches are commonly used to estimate source contributions: (1) atmospheric dispersion modeling; (2) receptor model analysis based on the properties of the aerosol measured at the receptor, and (3) emission inventory.

The Environmental Protection Agency PM₁₀ SIP Development Guidelines, Section 4.4, describes procedures to be used by the states for applying receptor models to estimate source contributions to PM₁₀ concentrations. These guidelines support the

use of receptor models as an important element of the SIP strategy development process. Receptor modeling (specifically Chemical Mass Balance or CMB) is especially appropriate in Lakeview where air stagnation and inversion conditions are prevalent. The specific application of the CMB Receptor Model to source apportionment in the Lakeview Nonattainment Area is described elsewhere.¹⁵

Chemical Mass Balance (CMB) is a form of receptor modeling based upon regression analysis of aerosol features such as trace element concentrations. The model attempts to find the most likely combination of source contribution estimates (SCE's) by minimizing the difference between the measured and model-predicted concentration of aerosol features. Values for the ambient aerosol matrix are obtained through chemical analysis of PM₁₀ filters taken at the Center & M Street site while the source "fingerprint" values are obtained through analysis of stack emissions. The CMB modeling protocol applied follows EPA guidance.¹⁶ All of the CMB modeling has been conducted using EPA's Version 7.0 CMB program.¹⁷

Ambient Aerosol & Source Emission Analysis

Seventeen PM₁₀ samples from the Center & M site have been evaluated through the CMB source apportionment model. Six of the samples exceeded 150 µg/m³, and were collected during the winter months. The highest sample analyzed was 256 µg/m³ on January 27, 1993. Chemical characterization of the samples includes 12 trace elements analyzed by x-ray fluorescence, 2 anions, 5 cations, and elemental/organic carbon, providing a data set that is compatible with the source emission profiles. Analytical uncertainties for each value are routinely reported and included in the CMB calculations. PM₁₀ source profiles representing all major emission groups within the airshed were used in the modeling. All of the profiles were obtained from the Pacific Northwest Source Profile Project.¹⁸ A list of the sources considered in the analysis is presented below:

¹⁵PM₁₀ Receptor Modeling for Lakeview Nonattainment Area: State of Oregon Department of Environmental Quality, Air Quality Division. September, 1994.

¹⁶Protocol for Reconciling Differences Among Receptor and Dispersion Models. US EPA 450/4-87-008. March, 1987.

¹⁷Receptor Model Technical Series, Volume III (Revised): CMB User's Manual (Version 6.0) US EPA 450/4-83-014R. May, 1987.

¹⁸Pacific Northwest Source Profile Library Project, Final Report Prepared by the State of Oregon Department of Environmental Quality, Air Quality Division. J. Core, Ed. September, 1989.

Table 4.19.2-7: Source Profiles Considered

No. Acronym Description

1	KFSOIL	Resuspended soil dust from Klamath Falls
2	RWC MED	Residential Wood Combustion profile for Medford
3	HOGFUEL	University of Oregon, Dutch Oven Hog Fuel Boiler
4	WOOD	Wood fiber including sander dust
5	SECSO4	Secondary sulfate estimated as ammonium sulfate
6	SECNO3	Secondary nitrate estimated as ammonium nitrate
7	SECNH4	Secondary Ammonium ion

Receptor Model Source Contribution Estimates
24-Hour Exceedance Days

Table 4.19.2-8 is an average of source contributions obtained from the analysis of six samples that exceeded the 24-hour NAAQS. All samples were collected during the winter months. The average exceedance day SCEs were adjusted by increasing the "Other" category to account for aerosol mass unexplained in the CMB solution. Figure 4.19.2-1 illustrates the results in graphical form.

Table 4.19.2-8: Adjusted Average Winter Exceedance Day PM₁₀ Source Contribution Estimates

Source	PM ₁₀ (µg/m ³)	% PM ₁₀
Soil Dust	16.2	7.6 %
Woodsmoke	163.1	77.0 %
Industry	6.3	3.0 %
Others	26.3	12.4 %
	211.8 µg/m ³	100 %

Other sources noted in Table 4.19.2-8 include aerosol mass unexplained in the CMB solution, water associated with the aerosol and minor contributions and uncertainties in the apportionment. Studies conducted in Los Angeles suggest that as much as 7% of the PM₁₀ mass is water.¹⁹ US EPA Chemical Mass Balance guidance specifies that the apportionment should account for at least 80% of the measured aerosol mass. On average ninety percent (90%) of the mass has been apportioned in Table 4.19.2-8. Average source contribution uncertainties (relative percent of mass) are 18% for wood smoke, 28% for hog fuel boilers and 11% for soil dust.

¹⁹S. Witz, R. Eden, C. Liu and M. Wadley, "Water Content of Collected Aerosols in the Los Angeles Basin," Presented at the Pacific Conference on Chemistry and Spectroscopy, Irvine, CA. October, 1987.

Annual Average Contributions

The annual average source contribution estimates noted in Table 4.19.2-9 were estimated from CMB analysis of PM₁₀ samples with mass loadings that approximate monthly average mass loadings. No data was available for September or November. The average mass loading of the analyzed filters is 34 μg/m³ as compared to an actual average of 1991-93 quarterly averages of 41 μg/m³. Since the source contributions are based on a limited number of samples, the annual averages shown are only approximations of the true annual source contributions.

Table 4.19.2-9: Annual Average PM₁₀ SCEs

Source	PM ₁₀ (μg/m ³)	% PM ₁₀	EI %
Soil Dust	7.1	20.8 %	19 %
Woodsmoke*	10.6	31.1 %	42 %
Industry	14.5	42.6 %	34 %
Transportation	0.1	0.3 %	2 %
Sec. Aerosol	1.1	3.2 %	-----
Others	0.7	2.0 %	<1 %
34 μg/m ³		100 %	100%

* Woodsmoke includes residential woodheating, slash burning, and residential open burning.

Figure: 4.19.2-1: Average Adjusted Exceedance Day Source Contribution Estimates

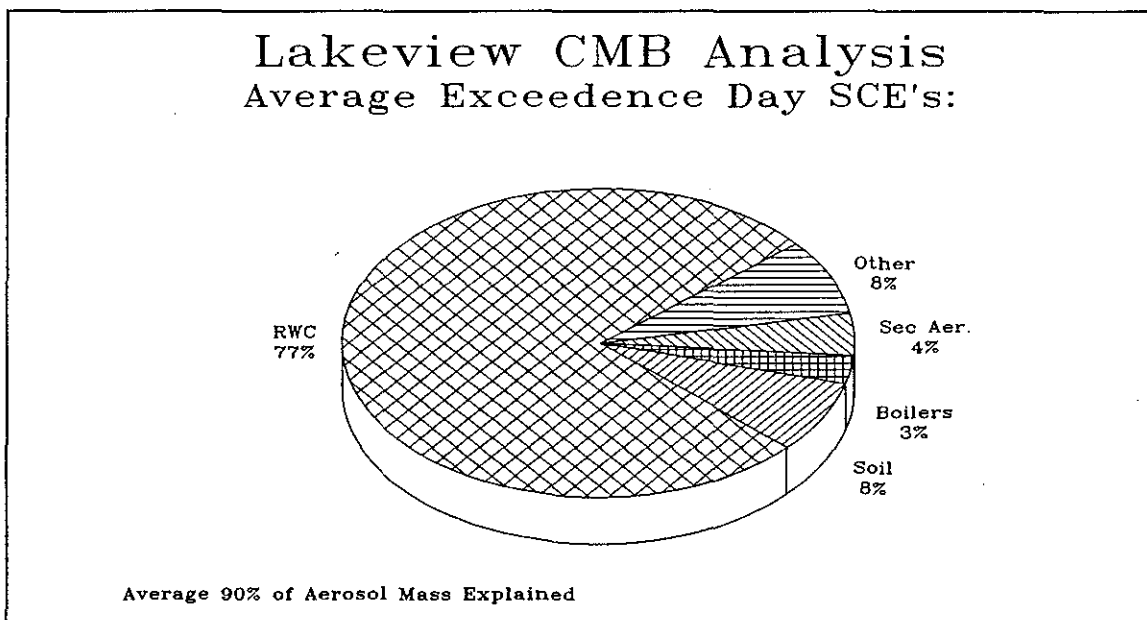


Figure 4.19.2-2: Lakeview PM₁₀ Worst-Case Day Emission Inventory

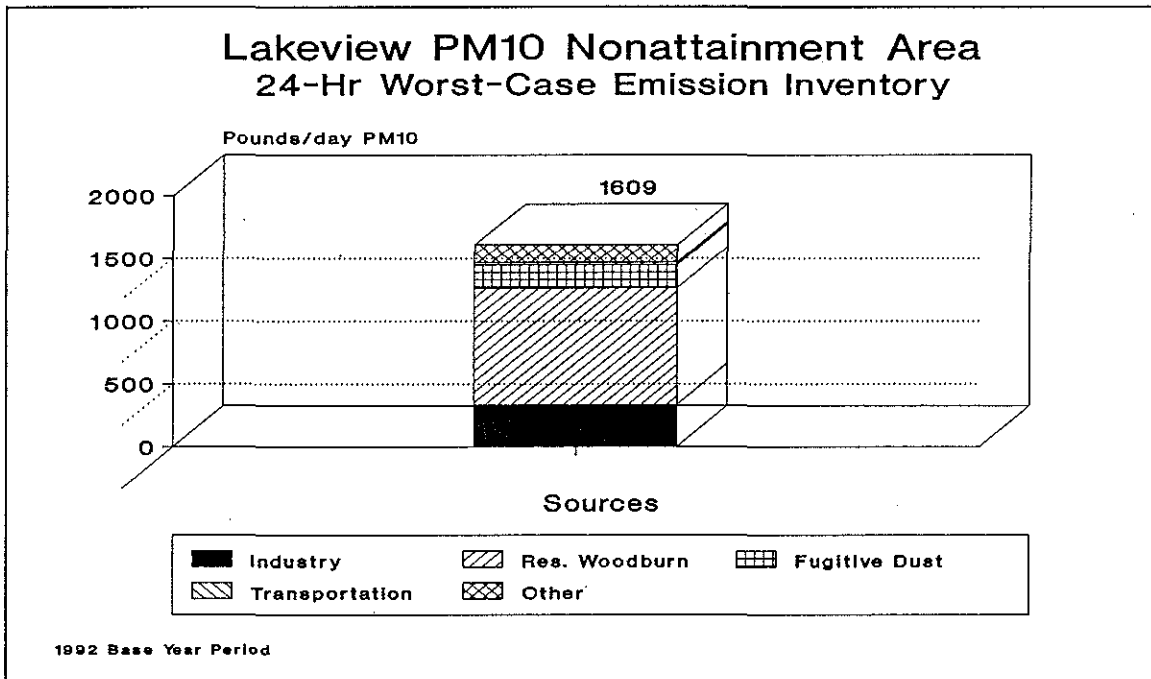
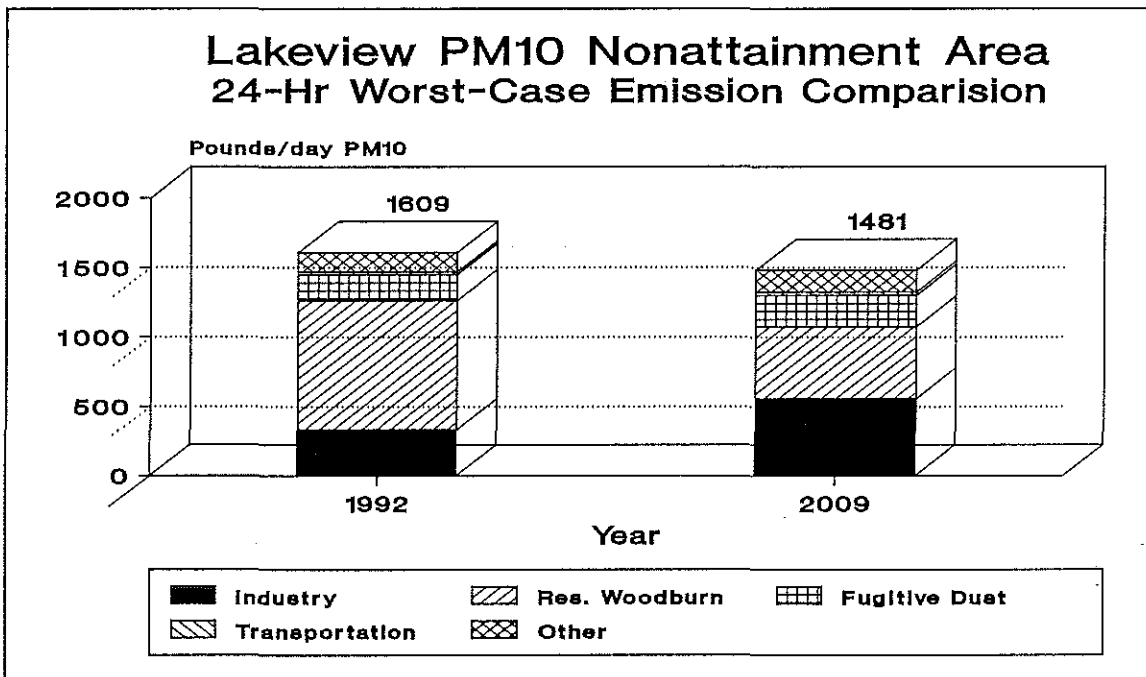


Figure 4.19.2-3: 1992 to 2009 Emission Projections



Analysis of Impacts by Source Categories

Receptor modeling of samples collected on days exceeding the NAAQS identifies residential wood smoke as the predominant emission source, with wintertime contributions ranging from 75% to 88% of total explained PM_{10} mass. These impacts are consistent with the general aerosol chemistry observed within the airshed, and are also generally consistent with diurnal and seasonal variations in Lakeview PM_{10} concentrations (Figures 4.19.1-2, 4.19.1-3).

Validation of Receptor Model Source Contribution Estimates

While receptor modeling solutions were relied upon as the primary authority for worst-case day source apportionment, two additional source apportionment methods were used to validate various aspects of the CMB solutions. Both methods support source impacts as estimated by CMB analysis. First, average worst-case day soil dust impacts as estimated by both CMB (8%), and emission inventory (11%) are in close agreement (within 3%). Secondly, a dispersion modeling analysis of hog fuel boiler impacts at the reference monitor site was conducted to independently evaluate CMB source contribution estimates, and the potential for significant industrial boiler impacts. The dispersion modeling analysis is more fully described in Section 6 of Appendix 7. Both screening meteorology and local MET data gathered by the Department were used in the analysis.

Air Dispersion Modeling

In order to independently evaluate the CMB analyses of hog fuel boiler impacts at the Center and M Street monitor, a dispersion modeling analysis was conducted on local hog fuel boiler emissions. Fremont Sawmill and Lakeview Lumber, two industrial facilities located approximately 1.5 and 0.5 km respectively, north of the Center and M Street monitor, are the only sources of hog fuel boiler emissions in the vicinity of Lakeview. Total hog fuel boiler PM_{10} emission rates, from all emission points, for Fremont Sawmill and Lakeview Lumber were used in the analysis. These emission rates were estimated from recent source tests, and these actual emissions were used instead of permitted emissions.

The results of the dispersion modeling, using both screening and on-site meteorological (MET) data, give projected PM_{10} impacts at a receptor located at the Center and M Street site similar to or lower than the CMB analyses. The results are summarized in the following table.

Table 4.19.2-10: Comparison of Modeled Impacts

Comparison of Modeled PM ₁₀ Impacts at Center and M Street Monitor Site						
Met Data Set	CMB Analyses 24-h avg µg/m ³	Modeling 24-h avg µg/m ³	DWash/ No DWash	Met YYMMDD	Modeled WS m/s 24-h avg	Stab Cat 24-h avg
Screening	6.3	7.4	DW		1.0	A
Exceed day On-site ⁽¹⁾	6.3	0.3 ⁽³⁾	DW	911216	1.0	D-E
Exceed day On-site ⁽¹⁾	6.3	0.5 ⁽³⁾	ND	911214	1.0	D-E
18-month On-site ⁽²⁾	6.3	5.3 ⁽⁴⁾	DW	911129	4.7	D

- Notes: 1) Met data for six exceedance days only (10/91 - 03/94).
 2) Met data for 18-months from three Winter seasons in period 10/91 - 03/94.
 3) Highest High concentration (because of limited MET data set).
 4) Highest Second High concentration.

The CMB analyses were conducted on samples taken on six exceedance days in the years 1991, 1992, and 1993. The results of these analyses give estimates of hog fuel boiler emission impacts in the range of 4.7 to 7.6 µg/m³, with a mean of 6.3 µg/m³.

ISCST2, using regulatory defaults, was the air dispersion model used in modeling projected impacts, and in evaluating the CMB results. For the local MET data, the model was run to estimate impacts using both the downwash and no downwash algorithms. In order to duplicate the same MET conditions occurring at the time the CMB samples were collected, projected impacts at the Center and M Street site were initially modeled using local data for these exceedance days only, aggregated into a single data set. Stability categories were estimated using the standard deviation of wind speed (sigma theta). Average MET conditions for these exceedance days showed stagnate conditions with an average wind speed of 0.64 m/s and the most common stability category of between D and E. Because gaussian dispersion models give unreasonable results for wind speeds less than 1 m/s, these wind speeds were raised to 1 m/s in the MET data set used for the modeling.

In addition to the exceedance-day met data set, 18 months of data from three Winter seasons (October 91-March 92, October 92-March 93, and October 93-March 94) were aggregated into a composite file that was used to model projected impacts at the Center and M Street site. Average met conditions for the 24-hour period

(911129) giving the Highest Second High of the 18-month period, were a wind speed of 4.7 m/s, and D Stability. This average wind speed is significantly higher than that recorded during the exceedance days and used in the exceedance-day only modeling.

Because of the limited size of the exceedance-day MET data set, the Highest High impact was used in the comparison with the CMB estimates. As shown in the previous table (Table 4.19.2-10), the results from using the exceedance-day met data set give lower impacts at the Center and M Street site than estimates from the CMB analyses. The results from using the 18-month composite met data set give a 24-hour average Highest Second High of $5.3 \mu\text{g}/\text{m}^3$, which is similar to the CMB estimate. Projected impacts at this site using SCREEN2 meteorology are also within the range of the CMB analyses, but occur under very unstable conditions (A Stability). Overall, the results of the dispersion modeling support the relatively low contribution of hog fuel boiler emissions at the Center and M Street monitor as evaluated by the CMB analyses.

Background PM_{10} Air Quality

PM_{10} aerosols from sources external to the UGB collectively contribute to background air quality. It is important to quantify the worst-case day background since this component of the total mass loading measured within the UGB is often not subject to the provisions of the nonattainment area control strategy. As a result, air quality improvements must be achieved by reducing emissions from those sources that contribute to the locally-generated component of the aerosol.

The closest background monitoring site is located at Vernon School (elevation 4,800 ft) 2 miles west-southwest of Lakeview. Annual average PM_{10} background air quality is estimated at $8.4 \mu\text{g}/\text{m}^3$ by using the largest available data record (October 1993 - December 1994). The 24-hour average wintertime (PM_{10} season) exceedance period background value is estimated at $7.5 \mu\text{g}/\text{m}^3$, and is based on the daily sampling record during the winter exceedance period of October 1993 through March 1994. Comparison of the annual and PM_{10} season averages indicates a very stable background value. The average of background PM_{10} concentrations which correspond to actual exceedance days at the Center & M Street site is $8.3 \mu\text{g}/\text{m}^3$. This value, taken as representative of background air quality during worst-case day exceedance periods, was used in the 24-hour winter worst-case control strategy calculations.

Receptor modeling analysis was conducted on several background samples which were both representative of the exceedance day time frame and close to the $8.3 \mu\text{g}/\text{m}^3$ average exceedance day background value. Table 4.19.2-11a provides source contribution estimates (in percent contribution) from two samples: $9 \mu\text{g}/\text{m}^3$ and $6.0 \mu\text{g}/\text{m}^3$ (average $7.5 \mu\text{g}/\text{m}^3$) taken from the Vernon School background site on

December 12, 1993 and December 20, 1993 ($18 \mu\text{g}/\text{m}^3$ and $124 \mu\text{g}/\text{m}^3$ respectively at Center & M Street). Source contribution percentages were applied to the $8.3 \mu\text{g}/\text{m}^3$ (Table 4.19.2-11b) average exceedence day background value to derive the individual exceedence day background source category microgram impacts.

Table 4.19.2-11a: Adjusted PM_{10} Season Source Contribution Estimates

Source	24-Hr Ave. PM_{10} ($\mu\text{g}/\text{m}^3$) Exceedance Day	SCE
Soil Dust	0.41	5.5 %
Industry	0.22	2.9 %
Woodsmoke	4.90	65.3 %
Sec. Aerosol	0.45	6.1 %
Others	1.51	20.2 %
	7.5 $\mu\text{g}/\text{m}^3$	100%

Table 4.19.2-11b: Adjusted Exceedence Day Background PM_{10} Source Contributions

Source	24-Hr Ave. PM_{10} ($\mu\text{g}/\text{m}^3$) Exceedance Day	SCE
Soil Dust	0.45	5.5 %
Industry	0.24	2.9 %
Woodsmoke	5.42	65.3 %
Sec. Aerosol	0.50	6.1 %
Others	1.68	20.2 %
	8.3 $\mu\text{g}/\text{m}^3$	100%

Average Exceedance Day "Local" Source Contribution Estimates

Estimates of the percent "Local" contribution of emission sources within the UGB requires that background components listed in Table 4.19.2-11(b) be subtracted from the source contributions listed in Table 4.19.2-8. The difference between these two sets of estimates is the contribution of "local" sources identified in the emission inventories. Table 4.19.2-13 lists the "local" source contribution estimate (SCE) to PM_{10} mass on average winter days which exceed the NAAQS PM_{10} mass loading.

Table 4.19.2-12: Average Exceedance Day "Local" PM₁₀ SCE's

Source	PM ₁₀ SCE's ($\mu\text{g}/\text{m}^3$)	SCE's % PM ₁₀	WCD Emission Inventory
Soil Dust	15.7	7.7 %	11.5 %
Industry	6.1	3.0 %	20.8 %
Woodsmoke	157.7	77.4 %	57.6 %
Others	24.1	11.9 %	10.1 %
	203.6	100 %	100 %

Estimation of "Local" Air Quality Impacts Based on Design Day

Estimation of the relative contributions of emission sources to the worst-case design day (217 $\mu\text{g}/\text{m}^3$) requires that Source Contribution Estimates (percent) listed in Table 4.19.2-12 be applied to the "local" design day (217 $\mu\text{g}/\text{m}^3$ - background). The result is the local impact of each source category on the 1992 design day.

Table 4.19.2-13: Design Day "Local" PM₁₀ SCE's

Source	"Local" PM ₁₀ PM ₁₀ ($\mu\text{g}/\text{m}^3$)	SCE's %	Emission Inventory
Soil Dust	16.1	7.7 %	11.5 %
Industry	6.2	3.0 %	20.8 %
Woodsmoke	161.7	77.4 %	57.6 %
Others	24.7	11.9 %	10.1 %
Local Impact	208.7	100 %	100 %
Background	8.3		
Total	217.0		

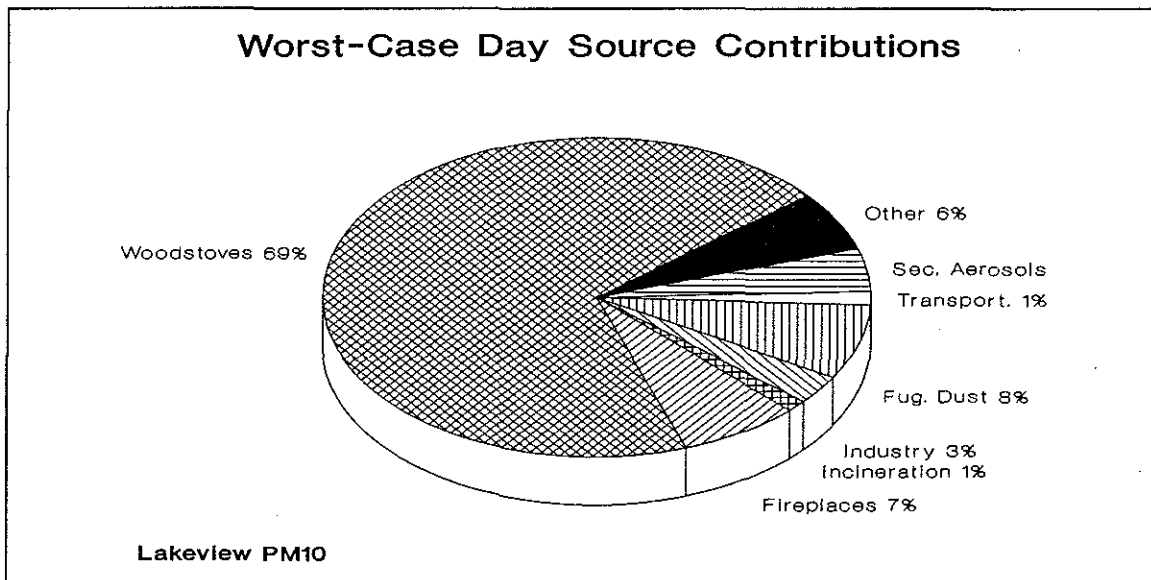
4.19.3 Emission Reduction Analysis

This section describes the emission reductions necessary to attain the NAAQS (4.19.3.1), a review of potential control measures that may be applied in Lakeview (4.19.3.2) and an assessment of the adequacy of the control measures to attain the NAAQS within the time limits specified by Section 188(c) of the Clean Air Act (4.19.3.3).

4.19.3.1 Emission Reduction Necessary for Attainment

The EPA PM₁₀ SIP Development Guidelines specify that a proportional modeling method can be used to estimate the control strategy requirements of the SIP. In the analysis below, the contribution of significant emission sources to the 1992 design value (217 $\mu\text{g}/\text{m}^3$) has been apportioned based on the "local" source contribution (%) estimates (Table 4.19.2-13; Table 4.19.3-1). Minor sources have been apportioned using worst-case day emission inventory estimates. Emission growth rates between 1992 and 1999 were applied to the ambient impact from each source category to determine the projected local impacts in 1999. The sum of the 1999 source impacts plus background provide the 1999 24-hour worst-case design value and the estimate of air quality improvement needed. Appendix 5 contains the Demonstration of Attainment rollback calculations.

Figure 4.19.3-1: Lakeview PM₁₀ Worst-Case Day Source Contributions



Projected 24-Hour Source Impacts in Future Years

To show the effect of separate growth rates for woodstoves, fireplaces and residential open burning, the total worst-case day woodsmoke impact (77.4%) as estimated in Table 4.19.2-13 was segregated into woodstove, fireplace, and open burning emission categories based on their relative contribution to the woodsmoke WCD emission inventory. Woodstove emissions were allocated at 69.0% of total woodsmoke SCE impact (77.4%*89.2%), fireplaces 7.2% (77.4%*9.3%), and residential open burning 1.2% (77.4%*1.5%). The transportation contribution, based on emission inventory percentages, was removed from the "Other" source contribution estimate (SCE), and assigned a separate transportation category.

Tables 4.19.2-12 and 4.19.2-13 list the 1992 source contribution estimates for the 24-hour worst-case day scenario. Source contributions at the 1999 design level were apportioned using the 1992 24-hour Average Exceedance Day Source Contribution Estimate percentages (listed in Table 4.19.2-13) applied to the "local" PM₁₀ air quality level of 208.7 µg/m³ (217 µg/m³ design value less the 8.3 µg/m³ background), then increased by source specific growth factors from 1992 to 1999.

**Table 4.19.3-1: Projected Future Source Category Impacts
(24-Hr Worst-case)**

Source	1992 WCD SCE	"Local" Design (µg/m ³)	1992-99 Growth (%)	1999 "Local" µg/m ³	Local (%)
Woodstoves	69.9%	144.1	7.0%	154.1	69%
Fireplaces	7.2%	15.1	-12.6%	13.0	6%
Incineration	1.2%	2.5	7.0%	2.7	1%
Total RWC	77.4%	161.7		-----	
Industry	3.0%	6.2	75.9%	10.8	5%
Fugitive Dust	7.7%	16.1	7.3%	17.2	8%
Transportation	1.4%	2.9	7.3%	3.1	1%
Sec. Aerosol	4.3%	9.0	7.0%	9.7	4%
Other Sources	6.2%	12.8	7.0%	13.9	6%
<hr/>					
Subtotals	100 %	208.7		224.5 µg/m ³	100%
Background		8.3		8.3 µg/m ³	
Total		217.0		232.8 µg/m ³	

Air quality improvement needed = 83 µg/m³ (232.8-150 µg/m³)
or a 37% [83/(233- bkgnd)] in worst-case day emissions
equivalent to 1007 pounds per day.

The control strategy must be comprised of a mix of individual source reduction measures such that the sum of the reductions equal or exceed the total reduction requirement. Adopted control strategies must be shown through a demonstration of attainment (Section 4.19.3.3) to attain and maintain the NAAQS by reducing emissions such that the overall reduction in 24-hour worst-case PM₁₀ concentration is at least 83 µg/m³.

4.19.3.2 Evaluation of Potential Control Measures

The PM₁₀ control strategy for the Lakeview UGB focuses on residential woodburning, the wood products industry, and winter road sanding fugitive emissions as well as public education programs, restrictions on residential open burning, forest slash burning emissions and management of industrial point source emission growth.

PM₁₀ Control Strategy Elements

The following control strategy elements have been adopted to assure attainment of the annual and 24-hour PM₁₀ NAAQS. Emission reduction credits associated with each element are listed and discussed in the following sections. A PM₁₀ emission reduction credit is a measure of the reduction in PM₁₀ emissions that would be accomplished through adoption and implementation of the program element. The strategy elements and credits are further described in Section 4.19.3.3.

Table 4.19.3-2 PM₁₀ Control Strategies Elements

Element	Strategy	Emission Reduction Credits by 1999 24-Hr.
Attainment Strategies		
1	Noncertified Woodstove Ban	22 %
2	Woodstove Curtailment Programs	30 %
3	Winter Road Sanding Controls	No Credit Taken
4	Low Income Woodstove Removal Program	17 %
5	Public Education Programs	No Credit Taken
6	Residential Open Burning Restrictions	50 %
7	Wood Products PSEL Revision	60 %
8	Industrial Significant Emission Rate	No Credit Taken
9	Offset Restrictions	No Credit Taken
10	Forestry Slash Burning (SPZ)	No Credit Taken

Residential Woodsmoke Control Elements

There are three basic approaches to reducing woodsmoke from stoves and fireplaces: (1) improving the performance of the woodheating systems such as through a certified woodstove program; (2) burning less wood through woodstove curtailment programs; and (3) providing assistance for the accelerated replacement of noncertified woodstoves. Some strategies have multiple advantages. Certified woodstoves, for example, improve emission performance by reducing the amount of woodsmoke per cord of wood burned while improving energy efficiency, thus reducing the amount of wood burned. Programs to replace noncertified stoves in low income homes with certified or non-wood heating systems provide long term, permanent emission reductions.

Other examples of effective control strategies are: a well designed public information; and energy conservation and firewood seasoning programs that result in better combustion (lower emissions) and better energy efficiency (less fuel burned). Additional strategies include a ban on the sale and installation of noncertified stoves. The key elements of the Lakeview residential wood smoke control program are described below.

RESIDENTIAL WOODHEATING

Pelletstoves:

Residential pelletstoves are included as part of the 1992 baseline woodstove emission inventory. Based on local building permit records and planning estimates, negligible growth in pelletstoves is expected in Lakeview in the near future. No pelletstove installations were permitted from August 1992 - August 1993.

Fireplaces:

Fireplace emissions in Lakeview represent 12% (88 lbs/day) of the 1992 baseline worst-case day woodheating emission inventory. Future emission projections from fireplaces have been separated from woodstove use in calculating the emission reduction benefit derived from stove replacement. Projections for wood use trends in fireplaces estimates a 1.8% per year decrease in fireplace use from 1992 through 2000. This estimate is conservative when compared to the actual decline in overall firewood use documented by historic woodheating surveys in other nonattainment areas.

RESIDENTIAL WOODSTOVES

Basis for Emission Reductions Due To Used Noncertified Woodstove Ban and Stove Replacements To Non-Wood Heating Systems

The Lake County Planning Department projects a maximum population growth rate of 1.6%/yr between 1992 and the year 2000. In recent years the population within the UGB has been declining. Only recently have population figures stabilized, and limited growth once again projected. The 1993 Woodheating Survey²⁰ documents that 59% of Lakeview households use woodheat as either a primary or secondary heating system. Maximum growth projections of new woodheating homes can be estimated as 1.6% x 59% woodheating = 0.9%/yr woodstove growth.

The 1992/93 Lakeview Woodheating Survey documented woodheating trends from the previous heating season of 1991/92. The Lakeview Woodheating Survey documented that in 1991/92, twenty one percent (21%) of past stove purchases were used, noncertified stoves, while 79% have been new, certified models. The 1992-93 survey reasonably reflects conditions prior to the statewide ban on the installation of used, noncertified woodstoves which was effective October 1991. Without prohibiting the sale and installation of used, noncertified stoves it could be expected that future purchases of woodstoves would retain a similar split between new and used appliances.

Growth in Stove Emissions Without Used Stove Restrictions

Residential woodstove use is projected to increase by 0.9% per year over the 7 year period from 1992 to 1999. In the absence of any restrictions on the growth of used noncertified stoves, emission growth attributable to the combination of certified stoves, and used noncertified stoves (50% greater emissions than certified), would increase baseline emissions by:

$$79\% \{ .9\%/yr \times 7 \text{ yrs} \times (100\%) \} + 21\% \{ .9\%/yr \times 7 \text{ yrs} \times (100\% + 50\%) \}$$

$$\text{Emissions Growth (BL99)} = \underline{7\%} \times \text{BL92}$$

Basis for a 22 % Woodstove Emission Reduction Credit

The following calculations are included in Appendix 5. Note that since the following calculations do not include emission reductions associated with the woodburning curtailment and low income replacement programs, the following tables cannot be directly compared to those found in Appendix 5, Tables 5 and 5a which report emission inventory changes associated with all strategies.

²⁰ 1993 Woodheating Survey, Lakeview, Oregon.

New Stoves and Stove Replacements

A replacement rate for existing conventional stoves is estimated at 5% per year. Changes to the Oregon Building Code in October 1991 prohibits the installation of noncertified used woodstoves. All future growth in woodstove use will therefore be 100% phase II certified technology. The Lake County Building Department reports negligible growth in the local use of pelletstoves. Lake County building records show that of the 155 permits issued to replace existing stove installations, from August 1992 to August 1993, only 6% were for new woodstoves. The balance (94%) were Monitor (brand name) kerosene zonal heaters, which are becoming increasingly popular in Lakeview as an alternative to woodheat. One hundred fifty-five (155) woodstove replacement permits (August 1992 through August 1993) out of an estimated 1,849 occupied housing units in the UGB provides and estimated stove replacement rate of approximately 8%/yr. The Lakeview Control Strategy assumes a more conservative 5%/yr replacement rate.

EMISSION ESTIMATES

Emission Growth From New Stove Installations; With Ban On Used Noncertified Stoves:

[Net Emission Reduction From Base Case]

(1) Reductions in woodstove emissions from the uncontrolled case would assume that the fraction of first time stove installations historically filled by used, noncertified stoves will now be filled with phase II certified units. Emission levels from the certified stove component would remain unchanged (0% emission reduction), while future emissions from certified stoves which replace the used stove fraction would decrease by 50%. Total future emissions would be expected to decrease over the base case period 1992-1999 by:

$$100\% \times \{79\%[6.3\% \times (0)] + 21\%[6.3\% \times (1-.50)]\} \times \text{BL92} = \underline{0.66\%(\text{BL92})}$$

Where BL92 = Base Line emissions for 1992

Note: 6.3% = 0.9%/yr x 7 years

Emission Reduction From Turnover of Existing Stove Installations:

Based on local building code agency estimates, an estimated 6% of future woodstove replacements are expected to replace the existing stove with a certified stove, providing a 50% decrease in emissions. The remainder of stove replacements are expected to be non-wood low emission devices such as kerosene heaters emitting 99% less PM_{10} than conventional stoves. Total future emissions would be expected to decrease over the base case period 1992-1999 by:

EMISSION REDUCTION

Assuming only noncertified stoves are replaced:

$$\begin{aligned} & \text{(Certified Stoves)} & \text{(Non-wood Devices)} \\ 100\% & \left(\{6\%[5\%/yr \times 7yrs \times (1-.5)]\} + \{94\%[5\%/yr \times 7yrs \times (1-.01)]\} \right) \\ = & \underline{33.6\% (BL92)} \end{aligned}$$

(2) The total emission reduction as a function of the 1999 uncontrolled woodstove emissions is:

$$\begin{aligned} \{0.66\% (BL92) + 33.6\% (BL92)\} / BL99 &= \underline{34.3\% (BL92)} \\ &= 32.1\% \\ & 1.07 (BL92) \end{aligned}$$

Where: $BL99 = 1.07 \times BL92$

Therefore, the ban on the sale and installation of used noncertified stove, in conjunction with documented replacement trends away from woodheat, provide a 32% credit by 1999.

RESIDENTIAL FIREPLACE EMISSION PROJECTION

Emissions from residential fireplaces are expected to decrease 1.8% per year from 1992 to 1999.

NET BENEFIT OF WOODHEATING RESTRICTIONS AND TRENDS

Woodstove Replacement: [Emission reduction due to turn over of existing noncertified stoves]

Stove replacements occur at an assumed rate of 5%/yr. Assuming 6% of stove replacements to be certified phase II technology, and 94% to be non-wood, low emission heating systems, the net emission reduction from the 1992 baseline will be -25.5 lbs/day. This worst-case day reduction is applied consistently (not compounded) each year from 1992 to 1999.

$$\begin{array}{l} \text{Wood Systems} & \text{Non-Wood Systems} \\ [6\% \times (5\%/yr \times .5)] & + [94\% \times (5\%/yr \times .99)] = 4.8\%/yr \text{ reduction.} \\ 1992 \text{ NCS baseline}^* & [530] \times .048 = \underline{-25.5 \text{ lbs/day.}} \end{array}$$

* Note: 1992 Noncertified Stove Woodstove (NCS) Baseline (530 lbs/day) does not include certified stove, pelletstove or fireplace emissions.

New Woodstoves: [Emission growth due to new stoves]

Assuming 100% of new stove installations to be certified phase II technology, the net worst-case day emission increase due to growth will be +2.8 lbs/day. This worst-case day increase is applied consistently (not compounded) from 1992 to 1999.

New Stoves "Used" Stove Fraction, Now New Certified Stoves
 $79\% \times (0.9\%/yr \times 1) + 21\% \times (0.9\%/yr \times 1) = 0.9\%/yr \text{ increase.}$
 $1992 \text{ WHD baseline} \uparrow [310.5] \times .009 = \underline{+ 2.8 \text{ lbs/day.}}$

† Note: Wood Heating Device (WHD) Baseline: Includes Catalytic and non-Catalytic Certified Stoves and Pellet Stoves.

Residential Fireplace Trend:

Residential fireplace use is projected to decrease by 1.8% each year. This means a constant reduction of 1.6 lbs/day, (not compounded) from the 1992 fireplace emission baseline.

$[87.8 \text{ lbs/day} \times .018] = - 1.6 \text{ lbs/day}$

Source Category	WORST-CASE EMISSIONS BY YEAR (lbs/day)							
	1992	1993	1994	1995	1996	1997	1998	1999
Existing Noncertified Stoves	530	505	479	454	428	403	377	352
Existing Certified Stoves	311	311	311	311	311	311	311	311
New Stoves	0	3	6	8	11	14	17	20
Old & New Fireplaces	88	86	85	83	81	80	78	77
TOTAL	928	904	880	856	831	807	783	759

The net reduction due to the used woodstove ban, conversion to non-wood heating systems, and fireplace usage trends (from the projected 1999 uncontrolled RWC emissions of 976 lbs/day) becomes 22%:

$1 - \frac{[1999 \text{ controlled}] 759 \text{ lbs/day}}{[1999 \text{ uncontrolled}^*] 976 \text{ lbs/day}} = 22.0 \% \text{ reduction}$

* 1999 Uncontrolled Emissions = Fireplaces emissions x -1.8%/yr x 7 years + All other stove emissions x 7%

$= (87.8 \text{ lbs/day} \times [1 - .126]) + (840.5 \times 1.07) = \underline{976 \text{ lbs/day}}$

Maintenance Credits Beyond 1999

The credits claimed for the used stove ban beyond 1999 follow the same approach, assuming that 21% of new stove installations would have been used, noncertified stoves had not the ban been in effect. Growth in new stoves is projected at 0.9% per year, reflecting the projected maximum population growth rate. This will continue the +2.8 lbs/day increase over baseline certified stove emissions.

Noncertified woodstove replacement is expected to remain at approximately 5% per year, with approximately 6% of replacements being certified stoves, and 94% a non-wood system. This will continue the -25.5 lb/day decrease over noncertified woodstove baseline emissions. Fireplace use trends will continue at a 1.8% per year reduction.

The calculated net benefits adjusted for emission growth provide a 243 lbs/day reduction during the 1999-2009 period.

Maintenance Credits Beyond 1999

	2000	2002	2004	2006	2009
Existing Noncertified Stoves	326	275	225	174	97
Existing Certified Stoves	311	311	311	311	311
New Stoves	20	22	34	39	48
Fireplaces	77	74	70	66	61
TOTAL	759	686	637	589	516

Net Emission Benefit for 1999-2009:
[759 - 516] = 243 lbs/day reduction

The Lakeview Air Quality Program

The Lake County Board of Commissions, and the Town of Lakeview shall establish through local ordinance the Lakeview Air Quality Program under the direction of the Town of Lakeview. Both ordinances shall establish a voluntary woodburning curtailment and public education program as well as restrictions on open burning. The County ordinance will allow for the Town of Lakeview to implement the Lakeview Air Quality Program within the County portion of the Urban Growth Boundary..

With assistance from the Department, the air quality program has been funded by the Town of Lakeview at a level of \$15,000 per year (FY 95) and employs one full time Air Quality Coordinator. Additional special project funds are provided by the Department to support major capital outlay and other one-time program needs. The Lakeview Program is found in Appendix 4. Key elements of the program are described below.

1. Public Information Programs

A comprehensive, professional, and well-financed public information program is essential for public cooperation and support in reducing woodsmoke emissions. The program clearly describes the need for the public's cooperation, the health-safety-energy-economic benefits to individuals and the community, and precisely what individuals can do to help. Key elements include: PM₁₀ public health issues, cleaner burning practices, proper stove installation and sizing, maintenance of woodburning systems, home weatherization, firewood seasoning and most importantly, curtailment of woodburning during poor ventilation episodes. Although no emission reduction credits are taken for the public information program, it is critical to the success of all of the other woodsmoke reduction elements.

The Lakeview Air Quality education program fulfills all of these criteria. Key elements of this aggressive program include:

- Radio public service announcements;
- Posters, brochures, bulk mailings, mail inserts;
- Community meetings and individual contacts promoting clean air and proper woodheating practices;
- Newspaper articles (interviews and press releases) on clean air issues, Air Pollution Index (API) trends and woodburning curtailment calls;
- Advertising in newspapers and on radio;
- Distribution of wood smoke health effects information, including studies and symposiums;

- Public speaking engagements and forums on PM₁₀ health and programs issues, proper woodburning methods, local ordinance requirements;
- Coordination with advisory committees, woodstove dealers environmental groups, governmental agencies, and public service organizations;
- Operation of the Lakeview Burning Advisory telephone system. Advisories are available daily at 947-5800.

EPA's Guidance Document for Residential Wood Combustion Emission Control Measures recognizes public education programs as an essential element of any residential woodburning control strategy. The highest level education program described by EPA is based on a comprehensive, aggressive program that includes all of the elements found in the Lakeview program described above. Although EPA recognizes public education programs as an essential element of woodburning control programs, no emission reduction credits can be assigned to the program without further technical justification.²¹

2. Stove Replacement Program

In August, 1994 the Town of Lakeview received an award totaling \$200,000 in State of Oregon Community Block Grant funds for a woodstove replacement program similar to the Medford CLEAR and Klamath Falls PURE woodstove replacement projects. The Town of Lakeview has provided an additional \$5,000, as well as in kind services, in support of the stove replacement project. Lake County has also provided \$2,000 toward the project. Over the next few years, funds administered by the Town of Lakeview will be used to replace approximately 80-90 traditional noncertified woodstoves with alternative heating systems such as certified woodstoves, kerosene heaters, and pelletstoves.

The program targets low and moderate income sole and primary source woodburning households and offers an interest free, differed payment loan for the replacement of noncertified woodstoves. The program will permanently reduce woodheating emission by approximately 88 lbs/day, decreasing baseline noncertified woodheating emissions by approximately (17%). These reductions are based on the expectation that non-wood heating systems will account for a significant portion of the replacements. This would mirror 1992-93 County permit records which indicate that over 90% of recent woodstove changeouts have been to kerosene heating systems. The average cost of replacing noncertified stove is expected to range from approximately \$1,800 to \$2,000 per home. Each applicant will be put in contact with state home weatherization programs, and

²¹US EPA, "Guidance Document for Residential Wood Combustion Emission Control Measures," EPA-450/2-89-015 (1989).

encouraged to participate.

3. Curtailment During Poor Ventilation Episodes.

Local ordinances implementing the Lakeview Air Quality and voluntary woodburning curtailment programs were formally adopted by the Lakeview Town Council in February 1995. It is anticipated that the Lake County Board of Commissioners will adopt complementary ordinances in March 1995. A voluntary curtailment program has been in operation and administered by Town of Lakeview since the fall of 1993. The program has been designed to limit the use of woodstoves and fireplaces during periods likely to exceed the 24-hour NAAQS, and is operated between November 1st and February 28th. Woodburning curtailment forecasts are made daily at 3:30 pm during this period.

The Lakeview program utilizes the Klamath Falls curtailment advisory as the primary resource for deriving daily curtailment advisories. In June 1993 an analysis was conducted which compared night-time (6 pm- 6 am) nephelometer values from Peterson School in Klamath Falls and Center & M Street in Lakeview for the 1991-93 winter seasons. Plots of the nephelometer values from both areas, matched against the daily Klamath Falls forecast call, show that the neph values track each other with a high degree of positive correlation. The analysis suggests that the Klamath Falls curtailment forecast call, if applied to the Lakeview nephelometer data, would provide an acceptable basis for a Lakeview specific curtailment forecast.

The Klamath Fall and Lakeview airsheds, approximately 100 miles apart, share similar regional air patterns. The Lakeview air quality coordinator evaluates the daily Klamath Falls forecasting call, and has the option to increase the stringency of the forecast call if local conditions warrant. The Klamath Falls curtailment forecast will be relied upon to initially implement the Lakeview curtailment program. Comparisons of Lakeview and Klamath Falls forecasting data will continue on a regular basis, and a site specific forecasting equation developed for Lakeview if the Department determines one to be necessary.

Klamath Falls forecasts are made daily between November 1st and April 1st. A "Yellow" forecast is issued if the 6 AM to 6 PM levels are forecast to be greater than 4.0 but less than 7.0 Bscat (equivalent to 81-150 $\mu\text{g}/\text{m}^3$ PM_{10}). A "Red" forecast is issued if the 6AM-6PM forecast is for Bscat levels greater than 7.0 or 150 $\mu\text{g}/\text{m}^3$. The curtailment calls are based on criteria provided by the Department and are based on a forecast algorithm using National Weather Service upper air and barometric pressure data, forecasts of synoptic meteorology, surface temperatures and wind speed/direction. A detailed discussion of the Klamath Falls curtailment methodology, as well as the Lakeview-Klamath Falls curtailment comparison, is found in Appendix 8.

Woodburning curtailment advisories are issued at three levels:

"Green" advisories are issued for periods during which NAAQS violations are unlikely. Woodburning is unrestricted during these periods but the public is asked to follow good woodburning practices. "Green" advisories are issued when PM_{10} levels are expected to be less than $80 \mu\text{g}/\text{m}^3$ 12-hour average from 6 AM to 6 PM.

"Yellow" advisories are issued for periods approaching exceedance of the NAAQS. Under a "Yellow" curtailment, the public is asked to curtail all unnecessary woodburning. Priority is given to the curtailment of noncertified stoves, with declining emphasis on certified stove and pelletstoves. Those who use wood as a sole source of heat are not expected to comply.

"Red" advisories are issued for periods of severely restricted ventilation during which PM_{10} levels are expected to exceed the NAAQS. During this period, the public is asked to curtail all woodburning, regardless of heating device type, with the exception of households in which woodburning is the sole source of heat.

Compliance and participation in the advisories is determined through neighborhood drive-through surveys of woodburning activity during "Green", "Yellow" and "Red" curtailment periods. The goal of the Lakeview voluntary curtailment program is to achieve a 30% compliance rate for the 2 to 4 days per year during which violations of the PM_{10} health standards could be expected. The Lakeview compliance rate is expected to be similar to other aggressively managed voluntary programs.

A compliance survey protocol document²² was specifically developed for the Lakeview program and can be found in Appendix 9. The protocol document establishes procedures for conducting, and evaluating neighborhood drive-through participation surveys. The protocol addresses the calculation of survey compliance, adjusting for and eliminating from the calculation any exemptions which may have been noted. In this way the protocol provides a conservative estimate of community participation.

²² Woodstove Survey Compliance Protocol: Oregon Department of Environmental Quality, Air Quality Division. S. Aalbers; September 1993

Quantitative Milestones / Reasonable Further Progress (RFP)

Mandatory Curtailment

Section 189(c) of the Clean Air Act requires quantitative milestones to be reached every three years until the area is redesignated to attainment. These milestones must demonstrate that Reasonable Further Progress (RFP) has been made toward attainment of the standard by the required deadline. The first RFP milestone for Lakeview is April 25, 1998. A milestone report will be submitted to EPA no later than 90 days after the milestone deadline. The second milestone deadline (three year intervals) is April 25, 2001.

The Lakeview Clean Air Ordinance contains an RFP provision which will upgrade the voluntary curtailment program to a mandatory program if the Department, in consultation with the Lakeview Air Quality Advisory Committee, the Town of Lakeview, and the EPA determine that implementation of the RFP contingency measures will be necessary. If needed, the mandatory program would be implemented in October 1998. The Ordinance contains appropriate provisions for compliance evaluation and enforcement. As additional assurance, state backup curtailment authority is available should the local government fail to adequately implement a required program.

Long Term Woodheating Control Strategy

Woodheating curtailment is viewed as a short-range control strategy to allow rapid attainment of the short term (24 hour) air quality standard. The Department of Environmental Quality is committed to pursue permanent reductions in woodheating emissions as a long-range strategy to reduce and eliminate the reliance on curtailment and to provide significant improvement in air quality. At a minimum, the following measures will be pursued to permanently reduce woodheating emissions:

- Special grant funding for the replacement of noncertified woodstoves in low or moderate income homes. A permanent funding source for woodheating emission reductions and stove replacement programs will be sought during the 1995 Oregon legislative session.
- Public education activities will include more specific information on the true cost of woodheating. The major goal of this effort is to inform those households that are spending more money to heat with wood in noncertified stoves than with more fuel efficient devices, such as oil, kerosene, or certified stoves, to consider alternatives.
- Further information and studies on the toxicity, health effects and other detrimental effects of PM₁₀ will be disseminated and heavily publicized in a continuing effort to convince more people that they should reduce their woodheating smoke.

- Oregon revised Statute prohibits the sale and installation of new and used noncertified woodstoves. This will accelerate the changeover to certified cordwood and non-wood heating systems.

Basis for Woodburning Curtailment Credits (Worst-case Day)

The goal of the Lakeview woodburning curtailment program is to achieve a 30% reduction in emissions on the 2 to 4 days per year on which violations of the 24-hour health standard are expected to occur. The Lakeview compliance rate is expected to be similar to compliance rates achieved by voluntary programs in other nonattainment areas. The first four years of the Medford curtailment program achieved a compliance rate of 25%, while the compliance rates for the first and second years of the Klamath Falls voluntary program were 25% and 45% respectively. Voluntary curtailment programs in both La Grande, Oregon and Missoula, Montana have both achieved a 30% compliance rate. The Town of Lakeview will continue to provide on-going assessments of curtailment compliance rates focusing additional staff resources on public education as necessary to achieve the compliance goal. If necessary, the Department will provide additional economic and technical assistance for increased public outreach or other methods to improve the compliance rate.

State of Oregon Statute

The Department has submitted a legislative proposal for the 1995 legislative session which would assess a fee on cordwood cut on state and federal land. Fees would be used to support local government emission reduction programs, including woodburning public education and curtailment, as well as woodstove loan/grant replacement programs. At such time as funding is obtained, the Department will provide staff resources and technical assistance to local governments, review expenditure plans, and assure that funding is spent in the most efficient way consistent with short and long term reduction. Permanently funding woodstove changeout programs will be an extremely effective measures in achieving long term, permanent emission reduction.

The 1991 Oregon Legislature passed several measures which will be relied upon as part of the Lakeview Control and Contingency strategy. These measures included:

I. REMOVAL OF NONCERTIFIED STOVE UPON SALE OF HOME IN PM₁₀ NONATTAINMENT AREA EFFECTIVE DECEMBER 31, 1999 (OAR 340 Division 34)

The 1990 Clean Air Act requires states to revise PM₁₀ control strategies for problem areas to include contingency plans and other provisions to insure that PM₁₀ health standards will be achieved by specified dates. Oregon Administrative Rule 340-34-200 through 340-34-215 requires that after December 31, 1994 all noncertified

woodstoves, except antique and cookstoves, be removed and destroyed upon sale of a home, if the nonattainment area has failed to attain the national ambient air quality standard by the applicable Clean Air Act deadline. In the case of Lakeview, this deadline is December 31, 1999. The Department views this program as a primary contingency measure for the overall PM₁₀ control strategies required by EPA. The requirements of the statute are immediately enforceable through civil penalties by amending OAR Chapter 340, Division 12.

FUNDING AND RESOURCES:

The Department will commit staff resources to the enforcement of the statute where necessary. If implementation of the contingency measure is required, the Department shall coordinate and convene an advisory group of affected parties to enhance the development and implementation of a comprehensive education and enforcement plan in each PM₁₀ nonattainment area. This process will ensure the swift and effective implementation of the strategy.

EMISSION REDUCTION:

The long term emission reduction potential of the stove removal contingency strategy will vary depending upon the turn over rate of homes with noncertified stoves, and the choice of replacement heating systems. An evaluation of census information and surveys of real estate transactions estimates an average annual home turn over rate of approximately 3% per year, with the average home being owned for 20 years.

A random home replacement distribution over 20 years, at 3% per year would increase the replacement rate of noncertified stoves from 5% to 8%. The expected emission reduction from both stove replacement strategies may range from 50% cleaner if certified woodstoves are chosen as the replacement heating device, to 99% cleaner if a oil or kerosene heater is chosen.

II. STATEWIDE WOODSTOVE CURTAILMENT (OAR 340 Division 34)

The 1991 Oregon legislature authorized the following program to be implemented in any area of the State where such a program is required under the Clean Air Act: If a local government or regional authority has not adopted or is not adequately implementing a Clean Air Act required woodstove curtailment program, the Environmental Quality

Commission may adopt by rule, and the Department of Environmental Quality may operate and enforce, a program to curtail residential woodburning during periods of air stagnation. The curtailment program would apply to woodstoves, fireplaces, and other woodheating devices. The State curtailment program must include at a minimum:

- ◆ A provision for a two stage curtailment program based on the severity of the projected air quality conditions.
- ◆ A provision to exempt all Oregon certified woodstoves from the first stage of curtailment.
- ◆ A provision for low income exemptions.
- ◆ A provisional exemption for sole source woodburning households.
- ◆ An exemption for pelletstoves.
- ◆ A provision for the Department to defer the operation and enforcement of the curtailment program at such time as the local government or regional authority has adopted and is adequately implementing the required curtailment program.

FUNDING AND RESOURCES:

Should it become necessary for the Department to implement a State residential wood smoke curtailment program within a community the Department would seek assistance from the EPA to fund the necessary public education, daily advisory, monitoring, surveyance, and enforcement efforts.

The Department staff could provide support for a public education campaign and distribute the daily burn advisory. The Department would explore the possibilities of contracting with local agencies to provide services in the areas of monitoring, compliance surveys, and enforcement.

EMISSION REDUCTION:

EPA guidance regarding woodheating curtailment programs suggests that a minimum 10% credit for emission reduction can be taken for a voluntary curtailment program, and that a minimum 50% emission reduction credit may be taken for a mandatory program. The Department has had several years of experience establishing and monitoring curtailment programs in the Medford, Klamath Falls, Jackson County, La Grande, and Grants Pass PM₁₀ Nonattainment Areas.

Based on the Department's experience with curtailment programs, a 30% emission reduction credit is a reasonable estimate for an aggressively managed voluntary woodburning curtailment program. A mandatory program, given the proper effort in the area of community education and enforcement, is capable of attaining emission reductions in the range of 70% to 90%.

III. USED STOVE BAN (OAR 340 Division 34)

Oregon Administrative Rules, Chapter 340, Division 34, 340-34-010 states that no person shall advertise for sale, offer to sell or sell, a used woodstove that was not certified for sale as new to the 1986 Oregon woodstove emission standard. Additionally, the State Building Code Agency has amended their administrative rules, prohibiting the installation of noncertified used woodstoves.

FUNDING AND RESOURCES:

The Department's Woodheating Program staff will investigate potential violations of the noncertified used stove sales ban, and assist the Department's enforcement section in taking appropriate enforcement action when necessary. The Department's Public Relations section, in conjunction with the Woodheating Program staff, continually conducts a public education and information campaign to increase public awareness of the new ban on used stove sales. The State Building Code Agency enforces the regulations prohibiting the installation of noncertified used stoves.

EMISSION REDUCTION:

Our best information indicates that historically, approximately one out of every four stoves purchased was an noncertified used stove. Prohibiting their purchase and installation will ensure that the full emission credit potential offered by the normal change over to certified stoves will be realized. With the prohibition on noncertified used woodstoves each new stove purchased in lieu of a used stove will provide at a minimum a 50% decrease in emissions or better depending upon the type of replacement heating device chosen.

Reasonably Available Control Measures for the Lakeview PM10 Control Strategy: RACM Elements

Reasonably Available Control Measures (RACM) for Urban Fugitive Dust and Residential Wood Combustion are defined by the EPA's April 2, 1991 Memorandum on PM₁₀ Moderate Area SIP Guidance. Further guidance is contained in EPA-450/3-88-008 (September, 1988), Control of Open Fugitive Dust Sources and EPA-450/2-89-015 (September, 1989), Guidance Document for Residential Wood Combustion Control Measures.

URBAN FUGITIVE DUST RACM MEASURES

Fugitive dust emissions account for approximately 11% of the worst-case day emission inventory. During the winter exceedance period it is expected that the majority of fugitive dust emissions will be the result of winter deicing practices and the application of anti-skid materials. EPA guidance provides a list of acceptable RACM measures that include the control of road sanding emissions. Considering the attainment needs of the community, additional RACM measures for fugitive dust, such as the paving of traffic surfaces, traffic reduction plans, and the mitigation of mud/dirt trackout, are not necessary. Control measures focusing on winter road sanding are appropriately matched to the emission source primarily responsible for worst-case day dust contributions.

RACM for dust in Lakeview will require improved material specifications for anti-skid materials. The Department of Transportation (ODOT) has committed to reduce road sanding emissions by implementing the priority use of cleaner and more durable aggregate. In addition, ODOT will coordinate with local officials for increased rapid cleanup of aggregate after each snow episode. The Department of Transportation continues to study the use of liquid chemical deicers as an alternative to conventional sanding material. It is estimated that these RACM measures will significantly reduce worst-case day road sanding-dust emissions. However, because exact percent reductions can not be quantified at this time, no formal emission reduction credit has been claimed in the attainment control strategy.

REASONABLY AVAILABLE RESIDENTIAL WOOD COMBUSTION CONTROL MEASURES

EPA guidance requires that the State PM₁₀ SIPs include strategies from each of the following four RACM measures:

1. Establish an episode curtailment program, including: a curtailment plan; a communication strategy to implement the plan; a surveillance plan (e.g., "windshield" survey, opacity trigger); Compliance tracking; and a program effectiveness evaluation.

The Lakeview voluntary curtailment program fulfills these requirements. Specific program elements are outlined in the Lakeview Clean Air Ordinance (Appendix 4).

2. Establish a public information program to inform and educate citizens about stove sizing, installation, proper operation and maintenance, general health risks of wood smoke, new technology stoves, and alternatives to woodheating.

The Lakeview public education program, as administered by The Town of Lakeview, provides comprehensive information on each of the elements in this RACM measure. This program is supplemented by the Department's public information program.

3. Encourage improved performance of woodburning devices by:

- Establishing a smoke observation program such that used for curtailment assessment, will help to identify, through opacity observation, deficiencies in stove operation and maintenance. Under such a program, information and assistance may be provided to the identified households to help reduce visible emissions from their devices;

Lakeview's curtailment surveillance program is used to assess curtailment compliance rates and to identify homeowners that are operating woodstoves with excessive emissions. Information regarding woodburning practices and the stove replacement program will be offered to houses observed burning at high levels.

- Evaluating and encouraging, as appropriate, the accelerated changeover of existing woodheating devices to alternative lower emission technologies such as EPA phase II certified woodstoves and pelletstoves, electric, oil, and kerosene heating systems.

Accelerated changeover is already being achieved through a \$200,000 Community Development Block Grant. Additional funding will be pursued in order to continue the noncertified stove replacement program.

4. Provide inducements that would lead to reductions in the stove and fireplace population (or use) by:

- Encourage a reduction in the number of woodburning devices (i.e., removing or disabling the devices) through tax credits or other incentives;

OAR 340 Division 34 includes, as a contingency measure, removal of noncertified woodstoves upon home sale.

- Discouraging the resale of used stoves through taxes, fees or other incentives;

OAR 340 Division 34 includes a ban on the sale of used woodstoves. State Building Code prohibits the installation of any noncertified woodstove. Taken together, these two strategies constitute an enforceable RACM measure.

RACM Measures not included in the Lakeview SIP include:

- Discouraging the availability of free (or very inexpensive) firewood by increasing cutting fees or limiting the cutting season.
- Slowing the growth of woodburning devices in new housing units by taxes, installation permit fees, or other disincentives.

Fugitive Dust Control Element

Reductions in emissions from road sanding materials are not necessary to attain the 24-hour NAAQS on worst-case winter days. However, significant emission reductions from winter road sanding are expected through the use of cleaner, more durable sanding material. Nearly all of the aggregate used within the UGB is applied by the Oregon Department of Transportation Highway Division, mostly on US 395 and US 140, which intersect in the north end of town. The City, and County maintain all other streets within the UGB. The City maintains streets within the Central Business District. Approximately 2,000 cubic yards of aggregate are applied each year by the Highway Division. The County and City use very little sanding material.

Several sanding control options were evaluated: (1) reducing the amount and frequency of road sanding material applied, thereby decreasing the amount of material to be entrained by traffic; (2) substitution of a more durable aggregate material; (3) rapid cleanup of road sanding materials after each snow event; and (4) use of a liquid deicing solution in lieu of traditional road sanding materials.

Winter Road Sanding Control Program

The specifics of the winter road sanding control strategy are contained in correspondence from the Oregon State Highway Division (Appendix 5). Reductions are based on the Highway Division's commitment to reduce winter road sanding emissions through a combination of (a) the priority replacement of aggregate with a cleaner, more durable material; and (b) coordination with local public works officials to enhance the rapid cleanup of materials using street washing or sweeping on major thoroughfares. Streets most impacted by these measures are US Highways 394 and 140.

These reductions will be documented on the basis of Highway Division materials specification and maintenance records. Since road sanding emissions are linearly related to road surface silt loading, future emission reductions can be estimated on the basis of Oregon State Highway Division records of the silt content of sanding material used each year within the nonattainment area, or the possible future substitution of liquid deicing materials in lieu of traditional sand or aggregate. Because of significant yearly variations in snowfall, the use of road sanding materials should also be expected to vary accordingly. The Town of Lakeview utilizes a minimal amount of sanding material on street intersections within the Central Business District. Dust control measures will focus on improved material specifications and handling as significant reductions in the volume of road sanding material used in this application would be inconsistent with public safety.

Additional dust RACM's are included in the industrial rule revisions (no credit taken), and include the mitigation of mud/dirt trackout.

Restrictions on Open Burning

The Lakeview Open Burning Ordinance contains restrictions on residential open burning within the Lakeview UGB. No open burning is allowed except by special permit. Permit conditions require that burning be restricted to Green curtailment advisory days only. Violation of permit conditions is punishable by civil penalty.

Wood Products Industry

Ostrander Construction Company dba Fremont Sawmill accounts for approximately 25% of 1992 actual point source emissions. The facility's Plant Site Emission Limit (PSEL), as defined in their 1992 air contaminant discharge permit contained a credit of 34.2 lbs/hr (15 tons/yr) from the previous shutdown of a Wigwam Burner. The Company has agreed to relinquish this credit to the Lakeview airshed. The new air contaminant discharge permit, effective September 29, 1994, will reflect the reduction in yearly and hourly PSEL, reducing worst-case day permitted emissions from a total of 1,190 lbs/day to 360 lbs/day. This provides a 70% reduction in

worst-case day permitted (PSEL) emissions from this facility.

Oregon Administrative Rules 340-30-005 through 340-30-255 will specifically add for the Lakeview Urban Growth Area, Reasonable Available Control Measures (RACM) for the control of industrial fugitive dust emissions, including the application of dust suppressants on unpaved roads and staging areas, the enclosure of stockpiled materials, and control of mud/dirt trackout. Also specified for permitted sources are requirements for routine source testing, and the development of operation and maintenance plans to improve the efficiency of combustion operation, monitoring, and control equipment.

Industrial Emission Growth Management

Oregon Administrative Rules 340-28-110 Significant Emission Rate provisions for industrial sources will be amended to add the Lakeview Nonattainment Area to (Table 3: OAR 340-28-110). These revisions are designed to tightly manage industrial emission growth through a reduction in the significant emission rate increase that triggers emission offset requirements for new or modified sources. The significant emission rate (trigger for New Source Review for new or major modified sources) was reduced from 15 to 5 tons per year. The offset requirements of OAR 340-28-1930 assures that future industrial emission growth will not compromise emission reductions achieved through other elements of the attainment strategy. Any emission increase of greater than 5 tons/yr must be fully offset. Emission increases of 15 tons/yr or greater will require Lowest Achievable Emission Rate (LAER) level control.

Prescribed Forestry Burning (Lakeview Special Protection Zone)

In order to mitigate any potential smoke impacts from forest slash burning, the Oregon Smoke Management Plan (ORS 477.515) will be amended to establish a Special Protection Zone (SPZ) for the Lakeview Nonattainment Area. The SPZ for Lakeview provides for voluntary restrictions on prescribed burning within 20 miles of the nonattainment area. Voluntary restrictions within the Special Protection Zone include: 1) a prohibition on burning if weather forecasts predict smoke impacts on the nonattainment area; 2) monitoring of burns for at least 3 days for potential smoke impacts; and 3) prohibition on the ignition of fires from December 1 to February 15 when "Red" woodburning curtailment days are in effect.

Should Lakeview fail to reach compliance with the National Ambient Air Quality Standard on December 31, 1999, and slash burning is determined to be a significant contributor, the Smoke Management Plan will require that several contingency measures be put in place. These include: 1) expansion of the zone to include sources of slash burning causing the impact; 2) expansion of the period of burning restrictions by 30 days; 3) a prohibition on all slash burning

within the SPZ in December and January if smoke impacts exceed 5-10 $\mu\text{g}/\text{m}^3$ (24-hour average); 4) protection from all slash burning within the SPZ from November 1 to March 1 if a smoke impact greater than 10 $\mu\text{g}/\text{m}^3$ (24-hour average) occurs; 5) establishment of a mandatory SPZ for the Lakeview Nonattainment Area.

Contingency Measures & Emission Reductions

Section 172(C)(9) of the Clean Air Act Amendments of 1990 Clean Air Act requires that the State Implementation Plan include contingency measures for significant sources of PM_{10} . These measures are to take effect without any further action by the State if the area fails to show reasonable further progress (RFP) or attain the PM_{10} standard by the attainment date required by the Act. Contingency measures are triggered upon notification by EPA that the area has failed to show RFP or upon publication by EPA of notice in the Federal Register that the area has failed to attain the National Ambient Air Quality Standard for PM_{10} by the attainment date required in the Clean Air Act. Depending upon the effectiveness of the control strategies, EPA could make this determination in 1999 or subsequent years.

The following elements have been included to fulfill this requirement of the Act:

Residential Woodburning Measures

1. Upgrade the Lakeview voluntary woodsmoke curtailment program to a mandatory program, including enforcement provisions, procedures, penalties, and exemptions. This provision is contained in the Lakeview Air Quality ordinance. State backup authority exists from the 1991 Legislature to allow the implementation of a state mandatory curtailment program should the local government fail to do so.

2. State backup authority exists to require removal of noncertified woodstoves upon sale of a home. This provision has been adopted in Oregon Administrative Rules Chapter 340, Division 34, and will be automatically implemented as necessary and required.

Emission Reductions From Contingency Measures

Woodstove emissions would be reduced an additional 249 pounds per day by the year 1999 through the contingency plan. This would represent 9% of the estimated 1999 emission levels prior to application of control strategy credits and 25% of the expected 1999 emissions level following strategy reductions. Because of the dominance of woodburning emissions within the airshed, the additional 25% emission reduction can be achieved through the implementation of a mandatory woodstove curtailment program designed to achieve an overall compliance rate of 67%.

4.19.3.3 Demonstration of Attainment

This section describes the application of emission reduction credits (described in Section 4.19.3.2.) for demonstrating attainment with the NAAQS. The calculations are based on proportional rollback of 1999 emission estimates. Appendix 5 contains the detailed calculations that support the following text.

Table 4.19.3-3: Summary of 24-Hour Emission Reductions To Be Achieved by 1999

<u>Strategy Element</u>	<u>Credit</u>	<u>Emission Reduction</u>
<u>Highway Road Sanding Program</u>	No Credit Taken	
<u>Wood Product Strategies</u>	60 %	830 Pounds/Day
<u>Woodburning Strategies</u>		
- Residential Open Burning	50 %	8 Pounds/Day
- Woodburning Curtailment	30 %	202 Pounds/Day
- Ban on Used Woodstoves	22 %	215 Pounds/Day
- Woodstove Removal Program	17 %	88 Pounds/Day
Woodstove Strategies, Total		<u>513 Pounds/Day</u>
Total reduction from all strategies....		1,342 Pounds/Day
Required emission reduction		1,007 Pounds/Day

No credits have been taken for the Lakeview public education program or the voluntary Forestry Smoke Management Program.

4.19.3.4 Emission Offsets and Banking

Although the control strategy does not formally incorporate provisions for growth in industrial emissions through an emission offset and banking provisions, there is a growth margin for increases in industrial emissions within the current plant permits. The difference between the 1992 actual (335 lbs/day) and the 1999 projected new maximum hourly PSEL industrial emission projections (556 lbs/day) is 221 pounds per day in PM₁₀ emissions.

OAR 340-28-110 (108)(a) and 340-28-1930 require that new or modified industrial sources that emit more than 5 tons per year of PM₁₀ emissions must obtain emission reductions from other sources to offset their emissions. The emission offsets may be obtained by reducing emissions within the facility to be modified, from other industrial sources, or from external sources: including woodstove emissions from sole source and low income households. The availability of a wide variety of possible emission offsets options will help assure both reasonable flexibility for future growth and continued maintenance of the NAAQS beyond 1999.

4.19.3.5 Demonstration of Maintenance

The Department and the Town of Lakeview will continue to pursue additional funding for the replacement of noncertified woodstoves. In addition, Oregon Administrative Rules banning the sale and installation of noncertified woodstoves will assure that emission growth will not cause the NAAQS to be exceeded by the year 2009. Appendix 5 lists emission projections for the 10 year period following attainment in 1999.

4.19.3.6 Emergency Action Plan Provisions

OAR 340 Division 27 describes Oregon's Emergency Action Plan. The rule is intended to prevent the excessive accumulation of air contaminants during periods of air stagnation which, if unchecked, could result in concentrations of pollutants which could cause significant harm to the public health. The rules establish criteria for identifying and declaring air pollution episodes below the significant harm level and were adopted pursuant to requirements of the Clean Air Act. The action levels found in the Plan were established by the Environmental Protection Agency and subsequently adopted by the Department.

The PM₁₀ "Alert" level is 350 µg/m³; the "Warning" level is 420 µg/m³, and the "Emergency" level is 500 µg/m³ (24-hour average). These levels must be coupled with meteorological forecasts that predict continuing air stagnation in order to trigger the Action Plan.

Authority for the Department to regulate air pollution sources during emergency episodes, including emissions from woodstoves, is provided under ORS 468A. The regulation of woodstoves is implemented under OAR 340-34-150 through - 175. These rules and statute give the Department authority to regulate woodstoves under emergency episode conditions. When there is an imminent and substantial endangerment to public health (the significant harm level), ORS 468.115 authorizes the Department, at the direction of the Governor, to enforce orders requiring any person to cease and desist actions causing the pollution. State and local police are directed to cooperate in the enforcement of such orders.

4.19.4 Implementation of the Control Strategy

Specific elements of the strategy were implemented as noted below.

4.19.4.1 Schedule for Implementation

The Oregon Ban on the sale and installation of used noncertified woodstove became effective September 30, 1991; the Lakeview air quality and voluntary woodburning curtailment programs were first implemented on October 1, 1993. Road sanding control strategy commitments were received from the Oregon Department of Transportation in January, 1995 and will be implemented during the winter of 1994-1995. Open burning restrictions implemented through local ordinance will begin in November, 1995. The Department's Significant Emission Rate rules become effective on the date of adoption, April 14, 1995. The Lake County Air Quality Ordinance is proposed for adoption in March 1995; the Town of Lakeview Air Quality Ordinance was adopted in February 1995. Implementation of all provisions of the Lakeview program will be complete by November, 1995.

4.19.4.2 Rules, Regulations and Commitments

The following rules and commitments have been adopted to assure the enforceability of the control strategies. The Lake County Board of Commissioners is expected to authorize the Town of Lakeview to implement the air quality program within the county portion of the UGB. Items marked with an asterisk (*) are contingency elements.

State of Oregon Rules

Ban on Used Woodstove Sales	OAR 340 Division 34
Woodstove Certification Program	OAR 340 Division 34
Lakeview Significant Emission Rate Rule	OAR 340-28- 110
Lakeview Industrial Emission Offset Rule	OAR 340-28-1930
Lakeview Industrial Dust RACM & O&M	OAR 340 Division 30
Woodstove Removal on Home Sale *	OAR 340 Division 34
Mandatory Curtailment Authority *	OAR 340 Division 34

Lake County & Town of Lakeview Ordinances

Lake County Air Quality Ordinance	To be adopted
Town of Lakeview Air Quality Ordinance	Adopted

Interagency Commitments

Winter Road Sanding Program, Oregon Department of Transportation Highway Division Correspondence.
Oregon Dept. of Forestry Smoke Management Plan: OAR 629-43-043

4.19.4.3 Reasonable Further Progress

Part D of Title I of the Clean Air Act Amendments of 1990 (Section 171) requires that State Implementation Plans make Reasonable Further Progress (RFP) toward attainment of the National Ambient Air Quality Standards (NAAQS). The Act further specifies that RFP means those annual incremental reductions of PM₁₀ emissions necessary to attain the NAAQS by the attainment date. The Department believes that the scheduled implementation of the provisions of the Lakeview SIP will achieve the RFP milestone. An evaluation of program implementation and control strategy effectiveness will be conducted by the Department prior to the first RFP milestone date of April 25, 1998. In the event that the Lakeview area fails to meet the Reasonable Further Progress milestone, the Department will complete a written analysis of control strategy commitments, evaluating the adequacy of implementation, and will, in consultation with the Lakeview Air Quality Committee, Town of Lakeview, and EPA, require as necessary the implementation of contingency measures to ensure compliance with the NAAQS by the Clean Air Act attainment deadline.

4.19.4.4 Revisions to the Plan

In the event that the Lakeview area fails to meet the applicable PM₁₀ attainment deadline of December 31, 1999, then the Department, as the designated lead agency, will first notify in writing the affected local governments and industrial organizations. Within 30 days of notification, the Department will complete a written analysis of control strategy commitments, evaluating the adequacy of implementation. If necessary, any deficiencies in implementation will be corrected through rulemaking within six months of the original deficiency notification. The six month time frame will accommodate the State's normal rulemaking process.

As the lead agency, the Department will submit a plan revision that meets all relevant Clean Air Act and EPA requirements within 18 months of a notification from EPA that the area has failed to meet the attainment deadline and has been reclassified to "Serious." The revision will include provisions to ensure that the Best Available Control Measures (BACM/BACT) for the control of PM₁₀ shall be implemented no later than 4 years after the date the area is reclassified as a "serious" area.

4.19.4.5 New Source Review Permitting Authority

The New Source Review rules (OAR 340-28-1900 to 2000) and Air Contaminant Discharge Permit rules (OAR 340-28-1700 to 1770) identify the procedures for reviewing and permitting new sources. The significant emission rate for PM₁₀ emissions in the Lakeview Nonattainment Area is five tons per year (OAR 340-28-110). The New Source Review rule (OAR 340-28-1930) identifies requirements for industrial sources in nonattainment areas, including a requirement

that emission increases above the Significant Emission Rate (SER) be fully offset, and that the application of LAER be required if the emission increased is proposed at 15 tons/yr or more.

4.19.4.6 Delegation of Lead Agency Authority

Barbara Roberts, Governor of the State of Oregon, has delegated the Department of Environmental Quality as the lead agency to implement, maintain and enforce the requirements of the Clean Air Act for PM₁₀ air quality in Lakeview.

4.19.5 Resource Commitments

Residential woodburning and education programs are being implemented by the Town of Lakeview through a combined EPA and DEQ special project grant of \$15,000 per year. The Department operates the air monitoring network used by Lakeview and Klamath County for the daily woodburning advisory, and provides public information assistance. These services are part of the Department's statewide base program identified in the State/EPA Agreement (SEA).

Financial assistance programs for noncertified woodstove replacement are available through the Lakeview loan program to assist low and moderate income households in the replacement of conventional woodstoves with cleaner alternatives. Community Development Block Grant (CDBG) funds totaling \$200,000 have been committed for this effort, with matching funds of \$5,000 and \$2,000 respectively committed by the Town and County of Lakeview.

Industrial compliance assurance programs are implemented by DEQ as part of the statewide base program; resources are identified in the SEA. Open burning control programs are implemented by local fire Departments.

Forestry slash burning programs are administered by the Oregon Department of Forestry, in cooperation with the US Forest Service, the Bureau of Land Management and other private forest land owners as part of their base programs.

4.19.6 Public Involvement

Development of the Lakeview PM₁₀ control strategy included several areas of public involvement including a continuing Citizen Air Quality Advisory Committee, public participation at strategy briefings for the Lakeview Town Council and County Commission, and public attendance at hearings held for the adoption of local ordinances and the attainment plan.

Proposed industrial rules to reduce the significant emission rate for new or modified industrial sources within the Lakeview Urban Growth Boundary are proposed for adoption by the Environmental

Quality Commission on April 14, 1995 as part of the attainment plan strategy package. A public hearing on the attainment plan was held in Lakeview on February 16, 1995. Testimony was received from one industrial representative.

4.19.6.1 Citizen Advisory Committee

The Lakeview Town Council appointed members to the Lakeview Air Quality Advisory Committee in March 1993 to assist the Town, County and Department in the development of control programs for the Lakeview Nonattainment Area. The seven member committee was advised of the requirements of the Clean Air Act and State Implementation Plan. The Committee considered alternative control strategy options and provided their recommendations to the Town Council and County Commission in December, 1994. The Lakeview Town Council has adopted local ordinances based on the Committee's recommendations implementing the air quality program and strategies. The Lake County Commission is reviewing the Committee's recommendations and are expected to adopt complementary ordinances in March, 1995.

4.19.6.2 Public Notice

Public notice of proposed rule revisions is done through mail lists maintained by the Department, through notifications published in local newspapers and through Department press releases.

4.19.6.3 Public Hearings

As noted above, a public hearing on the Lakeview Control Plan was held in Lakeview on February 16, 1995.

4.19.6.4 Intergovernmental Review

Public hearing notices regarding adoption of this revision to the State Implementation Plan have been distributed for local and State agency review prior to adoption by the Environmental Quality Commission.

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DLC: (3/7/95)

Attachment A-2

Division 34

OAR 340-34-150

OAR 340-34-200

OAR 340-34-210

DIVISION 34

RESIDENTIAL WOODHEATING

- 340-34-001 Purpose
- 340-34-005 Definitions
- 340-34-010 Requirements for Sale of Woodstoves
- 340-34-015 Exemptions
- 340-34-020 Civil Penalties

Woodstove Certification Program

- 340-34-045 Applicability
- 340-34-050 Emissions Performance Standards and Certification
- 340-34-055 Efficiency Testing Criteria and Procedures
- 340-34-060 General Certification Procedures
- 340-34-065 Changes in Woodstove Design
- 340-34-070 Labelling Requirements
- 340-34-075 Removable Label
- 340-34-080 Label Approval
- 340-34-085 Laboratory Accreditation Requirements
- 340-34-090 Accreditation Criteria
- 340-34-095 Application for Laboratory Efficiency Accreditation
- 340-34-100 On-Site Laboratory Inspection and Stove Testing Proficiency Demonstration
- 340-34-105 Accreditation Application Deficiency, Notification and Resolution
- 340-34-110 Final Department Administrative Review and Certificate of Accreditation
- 340-34-115 Revocation and Appeals

Woodburning Curtailment

- 340-34-150 Applicability
- 340-34-155 Determination of Air Stagnation Conditions
- 340-34-160 Prohibition on Woodburning During Periods of Air Stagnation
- 340-34-165 Public Information Program
- 340-34-170 Enforcement
- 340-34-175 Suspension of Department Program

**Woodstove Removal Contingency Program
for PM₁₀ Nonattainment Areas**

- 340-34-200 Applicability
- 340-34-205 Removal and Destruction of Uncertified Stove Upon Sale of Home
- 340-34-210 Home Seller's Responsibility to Verify Stove Destruction
- 340-34-215 Home Seller's Responsibility to Disclose

DIVISION 34

RESIDENTIAL WOODHEATING

Purpose

340-34-001 The purpose of this Division is to establish rules to control, reduce and prevent air pollution caused by residential woodheating emissions.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A
Hist.: DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93

Definitions

340-34-005 As used in this Division:

- (1) "Administrator" means the administrator of the Environmental Protection Agency or the administrator's authorized representative.
- (2) "Antique Woodstove" means a woodstove built before 1940 that has an ornate construction and a current market value substantially higher than a common woodstove manufactured in the same time period.
- (3) "Commission" means the Environmental Quality Commission.
- (4) "Consumer" means any person who buys a woodstove for personal use.
- (5) "Cookstove" means an indoor woodburning appliance the design and primary purpose of which is to cook food.
- (6) "Curtailement" means a period during which woodburning is prohibited due to the existence of an air stagnation condition.
- (7) "Dealer" means any person engaged in selling woodstoves to retailers or other dealers for resale. A dealer which is also an Oregon retailer shall be considered to be only a retailer for purposes of this Division.
- (8) "Destroy" means to demolish to a such an extent that restoration is impossible.
- (9) "Department" means the Oregon Department of Environmental Quality.
- (10) "Director" means the Director of the Department or the Director's authorized delegates.
- (11) "EPA" means the United States Environmental Protection Agency.
- (12) "Federal Regulations" means Volume 40 CFR Part 60, Subpart AAA, Sections 60.530 through 60.539b, dated July 1, 1993.
- (13) "Fireplace" means a framed opening made in a chimney to hold an open fire.
- (14) "Manufacturer" means any person who imports a woodstove, constructs a woodstove or parts for woodstoves.
- (15) "New Woodstove" means any woodstove that has not been sold, bargained, exchanged, given away or has not had its ownership transferred from the person who first acquired the woodstove from the manufacturer's dealer or agency, and has not been so used to have become what is commonly known as "second hand" within the ordinary meaning of that term.
- (16) "Pelletstove" means a woodburning heating appliance which uses wood pellets as its primary source of fuel.
- (17) "Retailer" means any person engaged in the sale of woodstoves directly to consumers.
- (18) "Used Woodstove" means any woodstove that has been sold bargained, exchanged, given away, or has had its ownership transferred from a retailer, manufacturer's dealer or agent to a consumer.
- (19) "Woodstove" or "Woodheater" means an enclosed, woodburning appliance capable of and intended for space heating and domestic water heating that meets all of the following criteria:
 - (a) An air-to-fuel ratio in the combustion chamber averaging less than 35-to-1 as determined by the test procedure prescribed in federal regulations 40 CFR part 60, subpart AAA, §60.534 performed at an accredited laboratory;
 - (b) A usable firebox volume of less than 20 cubic feet,
 - (c) A minimum burn rate less than 5 kg/hr as determined by the test procedure prescribed in federal regulations 40 CFR part 60, subpart AAA, §60.534 performed at an accredited laboratory; and
 - (d) A maximum weight of 800 kg. In determining the weight of an appliance for these purposes, fixtures and devices that are normally sold separately, such as flue pipe,

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chimney, heat distribution ducting, and masonry components that are not an integral part of the appliance or heat distribution ducting, shall not be included.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the Department of Environmental Quality.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 11-1984, f. & ef. 6-26-84; DEQ 5-1990, f. 3-7-90, cert. ef. 7-1-90; DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; AQ 1-1994, f. & cert. ef. 1-3-94

Requirements for Sale of Woodstoves

340-34-010

(1) Requirements applicable to the sale of new woodstoves

(a) No person shall advertise to sell, offer to sell, or sell a new woodstove in Oregon unless the woodstove has been labeled for heating efficiency and tested, certified and labeled for emission performance in accordance with criteria, emission standards, and procedures specified in the federal regulations, **40 CFR Part 60, Subpart AAA.**

(b) No manufacturer, dealer, retailer or individual shall alter the permanent certification label in any way from the label approved by the Administrator pursuant to federal regulations, 40 CFR part 60, subpart AAA.

(c) No manufacturer, dealer or retailer shall alter the removable label in any way from the label approved by the Administrator pursuant to federal regulations, 40 CFR part 60, subpart AAA.

(2) Requirements applicable for the sale of used woodstoves. A person shall not advertise to sell, offer to sell, or sell a used woodstove unless:

(a) The woodstove was certified by the Department or the Administrator on or after July 1, 1986, in accordance with emission performance and heating efficiency criteria applicable at the time of certification;

(b) The woodstove has permanently attached an emission performance label authorized by the Department or the EPA.

(3) Section (2) of this rule concerning used woodstoves that have not been certified shall not apply to the following:

(a) the selling by a consumer of a used woodstove that has not been certified by the Department to a person in the business of reusing, reclaiming or recycling scrap metal to be destroyed or used as scrap metal;

(b) the remittance of a used woodstove that has not been certified by the Department by a consumer to a retailer for the purpose of receiving a reduction in price on a new residential heating system.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the Department of Environmental Quality.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 11-1984, f. & ef. 6-26-84; DEQ 5-1990, f. 3-7-90, cert. ef. 7-1-90; DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; AQ 1-1994, f. & cert. ef. 1-3-94

Exemptions

340-34-015

(1) A pelletstove is exempt from the following requirements:

(a) OAR 340-34-050 through 340-34-070, woodstove certification, and OAR 340-34-010, requirements applicable to the sale of woodstoves.

(b) OAR 340-34-010(2), requirements applicable to the sale of used woodstoves;

(c) OAR 340-34-150 through 340-34-175, woodburning curtailment; and

(d) OAR 340-34-200 through 340-34-215, woodstove requirements applicable after December 31, 1994.

(2) An enclosed woodheating appliance capable of and intended for residential space heating or domestic water heating is exempt from OAR 340-34-010, requirements applicable to the sale of woodstoves,

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and OAR 340-34-050 through 340-34-070, woodstove certification, provided the manufacturer holds a valid letter of exemption from the Administrator which verifies that the appliance is not a woodstove or woodheater as defined in OAR 340-34-005(19).

- (3) An antique stove is exempt from the requirements of:
 - (a) OAR 340-34-010(2), requirements applicable to the sale of used woodstoves; and
 - (b) OAR 340-34-200 through 340-34-215, woodstove requirements applicable after December 31, 1994.
- (4) A cookstove is exempt from the requirements of Chapter 340, Division 34, except for OAR 340-34-150 through 340-34-175, woodburning curtailment.
- (5) A woodburning fireplace, woodstove or appliance operated within a household classified to be at less than or equal to 125 percent of the federal poverty level is exempt from the requirement of OAR 340-34-150 through 340-34-175, woodburning curtailment. The federal poverty level is published in the Federal Register, Volume 56, Number 34, February 20, 1990, page 6859, Department of Health and Human Services.
- (6) A woodstove operated in a residence that is equipped solely with woodheat is exempt from the requirements of OAR 340-34-150 through 340-34-175, woodburning curtailment.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the Department of Environmental Quality.]

Stat. Auth.: ORS Ch. 468 & 468A
Hist.: DEQ 11-1984, f. & ef. 6-26-84; DEQ 5-1990, f. 3-7-90, cert. ef. 7-1-90; DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; AQ 1-1994, f. & cert. ef. 1-3-94

Civil Penalties

340-34-020 Violations of Chapter 340, Division 34 are subject to Chapter 340, Division 12, Enforcement Procedures and Civil Penalties.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A
Hist.: DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93

Woodstove Certification Program

Applicability 340-34-045

- (1) OAR 340-34-045 through 340-34-070 shall apply to any woodstove or woodheater.
- (2) The following woodheating appliances are not subject to OAR 340-34-045 through 340-34-070:
 - (a) Open masonry fireplaces;
 - (b) Boilers;
 - (c) Furnaces; and
 - (d) Cookstoves.

Stat. Auth.: ORS Ch. 468 & 468A
Hist.: DEQ 4-1993, f. & cert. ef. 3-10-93, AQ 1-1994, f. & cert. ef. 1-3-94

Emissions Performance Standards and Certification

340-34-050

- (1) Unless exempted by the Department under 340-34-015, new woodstoves advertised for sale, offered for sale or sold in Oregon between July 1, 1990 and June 30, 1992 shall be certified by the Administrator pursuant to federal regulation as complying with the particulate matter emission limits specified in the federal regulations, **40 CFR Part 60, Subpart AAA, §60.532(a)**.
- (2) Unless exempted by the Department under 340-34-015, new woodstoves advertised for sale, offered for sale, or sold in Oregon on or after July 1, 1992 shall be certified by the Administrator pursuant to federal regulation as complying with the particulate matter emission limits specified in the federal regulations, **40 CFR Part 40, Subpart AAA, §60.532(b)**.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the Department of Environmental Quality.]

Stat. Auth.: ORS Ch. 468 & 468A

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Hist.: DEQ 11-1984, f. & ef. 6-26-84; DEQ 5-1990, f. 3-7-90, cert. ef. 7-1-90; DEQ 25-1991, f. & cert. ef. 11/13/91; AQ 1-1994, f. & cert. ef. 1-3-94

Efficiency Testing Criteria and Procedures

340-34-055 [DEQ 11-1984, f. & ef. 6-26-84; DEQ 5-1990, f. 3-7-90, cert. ef. 7-1-90; DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; Repealed by DEQ 1-1994, f. & ef. 1-3-94]

General Certification Procedures

340-34-060

- (1) Any new woodstove sold in Oregon shall be considered to be in full compliance with Oregon emission performance standards and rated heating efficiency requirements if the manufacturer holds a valid Certificate of Compliance issued by the Administrator, pursuant to federal regulations, 40 CFR Part 860, Subpart AAA. Such a stove shall be considered Oregon certified without any further action by the Department.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the Department of Environmental Quality.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 11-1984, f. & ef. 6-26-84; DEQ 5-1990, f. 3-7-90, cert. ef. 7-1-90; DEQ 25-1992, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; AQ 1-1994, f. & cert. ef. 1-3-94

Changes in Woodstove Design

340-34-065 [DEQ 11-1984, f. & ef. 6-26-84; DEQ 5-1990, f. 3-7-90, cert. ef. 7-1-90; DEQ 25-1992, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; Repealed by DEQ 1-1994, f. & ef. 1-3-94]

Labelling Requirements

340-34-070 New woodstoves sold in Oregon shall have affixed to them:

- (1) A permanent label, in accordance with federal regulations, 40 CFR, Part 60, Subpart AAA, §60.536.
- (2) A point-of-sale removable label in accordance with federal regulations 40 CFR, Part 60, Subpart AAA, §60.536.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

[Publications: The publication(s) referred to or incorporated by reference in this rule are available from the office of the Department of Environmental Quality.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 11-1984, f. & ef. 6-26-84; DEQ 5-1990, f. 3-7-90, cert. ef. 7-1-90; DEQ 25-1992, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; AQ 1-1994, f. & cert. ef. 1-3-94

Removable Label

340-34-075 [DEQ 11-1984, f. & ef. 6-26-84; DEQ 5-1990, f. 3-7-90, cert. ef. 7-1-90; DEQ 25-1992, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-9-93; Repealed by DEQ 1-1994, f. & ef. 1-3-94]

Label Approval

340-34-080 [DEQ 11-1984, f. & ef. 6-26-84; DEQ 5-1990, f. 3-7-90, cert. ef. 7-1-90; DEQ 25-1992, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; Repealed by DEQ 1-1994, f. & ef. 1-3-94]

Laboratory Accreditation Requirements

340-34-085 [DEQ 11-1984, f. & ef. 6-26-84; DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; Repealed by DEQ 1-1994, f. & ef. 1-3-94]

Accreditation Criteria

340-34-090 [DEQ 11-1984, f. & ef. 6-26-84; DEQ 5-1990, f. 3-7-90, cert. ef. 7-1-90; DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; Repealed by DEQ 1-1994, f. & ef. 1-3-94]

Application for Laboratory Efficiency Accreditation

340-34-095 [DEQ 11-1984, f. & ef. 6-26-84; DEQ 5-1990, f. 3-7-90, cert. ef. 7-1-90; DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; Repealed by DEQ 1-1994, f. & ef. 1-3-94]

On-Site Laboratory Inspection and Stove Testing Proficiency Demonstration

340-34-100 [DEQ 11-1984, f. & ef. 6-26-84; DEQ 5-1990, f. 3-7-90, cert. ef. 7-1-90; DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; Repealed by DEQ 1-1994, f. & ef. 1-3-94]

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Accreditation Application Deficiency, Notification and Resolution

340-34-105 [DEQ 11-1984, f. & ef. 6-26-84; DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; Repealed by DEQ 1-1994, f. & ef. 1-3-94]

Final Department Administrative Review and Certificate of Accreditation

340-34-110 [DEQ 11-1984, f. & ef. 6-26-84; DEQ 5-1990, f. 3-7-90, cert. ef. 7-1-90; DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; Repealed by DEQ 1-1994, f. & ef. 1-3-94]

Revocation and Appeals

340-34-115 [DEQ 11-1984, f. & ef. 6-26-84; DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93; Repealed by DEQ 1-1994, f. & ef. 1-3-94]

Woodburning Curtailment

Applicability

340-34-150 OAR 340-34-150 through 340-34-175 shall apply to any portion of the state:

- (1) Where the Department has determined that, under the requirements of the Clean Air Act, an enforceable woodburning curtailment program is required as an emission reduction control strategy for a PM₁₀ nonattainment area and the Department has determined that the local government or regional authority has failed to adopt or adequately implement the required woodburning curtailment program. In determining whether a local government or regional authority has failed to adequately adopt or implement a curtailment program, the Department shall determine if a local government or regional authority:
 - (a) has adopted an ordinance that requires the curtailment of residential wood heating at forecasted air pollution levels which are consistent with the curtailment conditions and requirements specified in OAR 340-34-155(1) and 340-34-160(1) and (2);
 - (b) is issuing on a daily basis curtailment advisories to the public consistent with OAR 340-34-165; and

(c) is conducting surveillance for compliance and is taking adequate enforcement actions consistent with OAR 340-34-170.

- (2) Where the Department has determined that, under the requirements of the Clean Air Act, an enforceable woodburning curtailment program is required as an emission abatement strategy to respond to an air pollution emergency.

~~[(3) That is classified as a nonattainment area for PM₁₀ that does not achieve attainment by December 31, 1994, and which does not have an enforceable curtailment program that satisfies the criteria in sections (1)(a), (b) and (c) above.]~~

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93

Determination of Air Stagnation Conditions

340-34-155 The Department shall utilize appropriate data and technology to develop methodology criteria for a curtailment program that:

- (1) For use as an emission reduction control strategy or contingency plan for PM₁₀ nonattainment areas:
 - (a) Calls a Stage I advisory when the PM₁₀ standard is being approached; and
 - (b) Calls a Stage II advisory, when an exceedence of the PM₁₀ standard is forecasted to be imminent.
- (2) For use as an emission abatement strategy in order to respond to an air pollution emergency
 - (a) Calls an Alert when PM₁₀ alert levels have been reached and are forecasted to continued; and
 - (b) Calls a Warning when PM₁₀ warning levels have been reached and are forecasted to continue.
 - (c) Alert and Warning levels are specified in OAR Chapter 340, Division 27.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93

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Prohibition on Woodburning During Periods of Air Stagnation.

340-34-160

- (1) During any designated Stage I Advisory, the operation of any uncertified woodstove, fireplace, or woodburning appliance shall be prohibited unless exempted under the provisions of OAR 340-34-015.
- (2) During any designated Stage II Advisory, the operation of any woodstove, fireplace, or woodburning appliance shall be prohibited unless exempted under the provisions of OAR 340-34-015.
- (3) During any designated PM₁₀ Alert, the operation of any uncertified woodstove, fireplace, or wood burning appliance shall be prohibited unless exempted under the provisions of OAR 340-34-015.
- (4) During any designated PM₁₀ Warning, the operation of any woodstove, fireplace, or woodburning appliance shall be prohibited unless exempted under the provisions of OAR 340-34-015.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A
Hist.: DEQ 25-1992, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93

Public Information Program

340-34-165 The Department or its designated representative shall implement a public information program to disseminate the daily air pollution advisory to the local community. The public information program shall include but may not be limited to the utilization of applicable local media including television, radio, and newspapers.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A
Hist.: DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93

Enforcement

340-34-170

- (1) The Department or its designated representative shall monitor the level of compliance with curtailment requirements during designated periods of air stagnation.
- (2) A rebuttable presumption of a violation shall arise if smoke is being emitted through a flue or chimney during a curtailment period unless the household from which smoke is being emitted has provided the Department or designated representative with information indicating that the household or its woodburning appliance is exempt from curtailment requirements in accordance with OAR 340-34-015.
- (3) Any person claiming an exemption to OAR 340-34-150 through 340-34-175 in accordance with OAR 340-34-015 in response to a Notice of Noncompliance shall provide the Department with documentation which establishes eligibility for the exemption. The Department shall review the documentation and make a determination regarding the exemption status of the household, or woodheating appliance. The following documentation shall be submitted to the Department for review in order to establish exemption status under the criteria of OAR 340-34-015:
 - (a) For households desiring low income exemption status a copy of the previous year tax returns. The tax return should reflect the total combined household income for the past year;
 - (b) A signed affidavit attesting to the sole source status of a home (see note);
 - (c) A signed affidavit attesting to the certification status of the home heating appliance (see note).

Note: Affidavits for certified stove, low income, and sole source exemptions are available from the Woodheating Program, Air Quality Division, Department of Environmental Quality; 811 SW Sixth Avenue, Portland, Oregon 97204.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

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Hist.: DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3-10-93

Suspension of Department Program

340-34-175

- (1) The Department shall suspend the operation and enforcement of OAR 340-34-150 through 340-34-170 in any area upon determination by the Department that the local government or regional air quality authority has adopted and is adequately implementing a woodburning curtailment program that is at least as stringent as the program outlined in OAR 340-34-150 through 340-34-170.
- (2) In making a determination concerning the adequacy of a local or regional woodburning curtailment program, the Department shall consider whether or not the local government or regional authority:
 - (a) Has adopted an ordinance that requires the curtailment of residential woodheating at forecasted air pollution levels which are consistent with curtailment conditions specified in OAR 340-34-155;
 - (b) Is issuing curtailment advisories to the public on a daily basis;
 - (c) Is conducting surveillance for compliance and is taking adequate enforcement actions;
 - (d) Any other information the Department determines is necessary to determine the adequacy of the curtailment program.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3/10/93

Woodstove Removal Contingency Program for PM₁₀ Nonattainment Areas

Applicability

340-34-200 OAR 340-34-200 through 340-34-215 shall apply to any area classified as a nonattainment area for PM₁₀ that does not achieve attainment by ~~[December 31, 1994]~~ the applicable Clean Air Act deadline.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3/10/93

Removal and Destruction of Uncertified Stove Upon Sale of Home.

340-34-205 Except as provided for by OAR 340-34-015, any uncertified woodstove shall be removed and destroyed by the seller upon the sale of a home.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3/10/93

Home Seller's Responsibility to Verify Stove Destruction

340-34-210 Any person selling a home which contains an uncertified woodstove shall provide to the Department or the Department's designated representative prior to the sale of the home, a copy of a receipt from a scrap metal dealer verifying that the stove has been destroyed.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. & cert. ef. 3/10/93

Home Seller's Responsibility to Disclose

340-34-215 Any person selling a home in which an uncertified woodstove is present shall disclose to any potential buyer, buyer's agent or buyer's representative that the woodstove is uncertified, and must be removed and destroyed upon sale of the home.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

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Stat. Auth.: ORS Ch. 468 & 468A
Hist.: DEQ 25-1991, f. & cert. ef. 11/13/91; DEQ 4-1993, f. &
cert. ef. 3/10/93

Attachment A-3

Selected Sections of Division 28

OAR 340-28- 110

OAR 240-28-1930

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CHAPTER 340, DIVISION 28 - DEPARTMENT OF ENVIRONMENTAL QUALITY

Table 2
OAR 340-28-110

**Significant Emission Rates for Pollutants
Regulated Under the Clean Air Act**

Significant Pollutant	Emission Rate
(A) Carbon Monoxide	100 tons/year
(B) Nitrogen Oxides (NO _x)	40 tons/year
(C) Particulate Matter	25 tons/year
(D) PM ₁₀	15 tons/year
(E) Sulfur Dioxide	40 tons/year
(F) VOC	40 tons/year
(G) Lead	0.6 ton/year
(H) Mercury	0.1 ton/year
(I) Beryllium	0.0004 ton/year
(J) Asbestos	0.007 ton/year
(K) Vinyl Chloride	1 ton/year
(L) Fluorides	3 tons/year
(M) Sulfuric Acid Mist	7 tons/year
(N) Hydrogen Sulfide	10 tons/year
(O) Total reduced sulfur (including hydrogen sulfide)	10 tons/year
(P) Reduced sulfur compounds (including hydrogen sulfide)	10 tons/year
(Q) Municipal waste combustor organics (measured as total tetra- through octa- chlorinated dibenzo-p-dioxins and dibenzofurans)	0.0000035 ton/year
(R) Municipal waste combustor metals (measured as particulate matter)	15 tons/year
(S) Municipal waste combustor acid gases (measured as sulfur dioxide and hydrogen chloride)	40 tons/year

(a) For the Medford-Ashland Air Quality Maintenance Area, ~~and~~ the Klamath Falls Urban Growth Area, and the Lakeview PM₁₀ Nonattainment Area, the Significant Emission Rate for particulate matter is defined in Table 3. For the Klamath Falls Urban Growth Area, the Significant Emission Rates in Table 3 for particulate matter apply to all new or modified sources for which permit applications have not been submitted prior to June 2, 1989. For the Lakeview PM₁₀ Nonattainment Area, the Significant Emission Rates in Table 3 for particulate matter apply to all new or modified sources for which complete permit applications have not been submitted to the Department prior to May 1, 1995.

Table 3
OAR 340-28-110

Significant Emission Rates for the Nonattainment Portions of the Medford-Ashland Air Quality Maintenance Area, ~~and~~ the Klamath Falls Urban Growth Area, and the Lakeview PM₁₀ Nonattainment Area.

Day	Emission Rate	
	Annual	Hour
<u>Air Contaminant</u>	<u>Kilograms</u>	<u>(tons)</u>
<u>Kilogram</u>	<u>(lbs)</u>	<u>kilogram</u>
<u>(lbs)</u>		
Particulate Matter	4,500	(5.0)
23 (50.0) or PM ₁₀	4.6	(10.0)

- (b) For regulated air pollutants not listed in Table 2 or 3, the Department shall determine the rate that constitutes a significant emission rate.
- (c) Any new source or modification with an emissions increase less than the rates specified in Table 2 or 3 associated with a new source or modification which would construct within 10 kilometers of a Class I area, and would have an impact on such area equal to or greater than 1 ug/m³ (24 hour average) shall be deemed to be emitting at a significant emission rate.

the approvability of the application. No later than 10 working days after the close of the public comment period, the applicant may submit a written response to any comments submitted by the public. The Department shall consider the applicant's response in making a final decision. The Department shall make all comments available for public inspection in the same locations where the Department made available preconstruction information relating to the proposed source or modification;

- (G) Make a final determination whether construction should be approved, approved with conditions, or disapproved pursuant to this section;
- (H) Notify the applicant in writing of the final determination and make such notification available for public inspection at the same location where the Department made available preconstruction information and public comments relating to the source or modification.
- (I) After the effective date of Oregon's program to implement the federal operating permit program, the owner or operator of a source subject to OAR 340-28-2110 who has received a permit to construct or modify under OAR 340-28-1900 through 340-28-2000, shall submit an application for a federal operating permit within one year of initial startup of the construction or modification, unless the federal operating permit prohibits such construction or change in operation. The federal operating permit application shall include the following information:
 - (i) information required by OAR 340-28-2120, if not previously included in the ACDP application;
 - (ii) a copy of the existing ACDP;
 - (iii) information on any changes in the construction or operation from the existing ACDP, if applicable; and
 - (iv) any monitoring or source test data obtained during the first year of operation.

[NOTE: This rule is included in the State of Oregon Clean Air

Act Implementation Plan as adopted by the EQC under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 25-1981, f. & ef. 9-8-81; DEQ 18-1984, f. & ef. 10-16-84; DEQ 13-1988, f. & cert. ef. 6-17-88; DEQ 4-1993, f. & cert. ef. 3-10-93; Renumbered from 340-20-230, DEQ 13-1993, f. & ef. 9-24-93; DEQ 19-1993, f. & ef. 11-4-93

Review of New Sources and Modifications for Compliance With Regulations

340-28-1920 The owner or operator of a proposed major source or major modification shall demonstrate the ability of the proposed source or modification to comply with all applicable requirements of the Department, including NSPS, OAR 340-25-505 through 340-25-530, and NESHAP, OAR 340-25-450 through 340-25-485, and shall obtain an ACDP pursuant to OAR 340-28-1700 through 340-28-1790.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the EQC under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 25-1981, f. & ef. 9-8-81; DEQ 4-1993, f. & cert. ef. 3-10-93; Renumbered from 340-20-235, DEQ 13-1993 f. & ef. 9-24-93

Requirements for Sources in Nonattainment Areas

340-28-1930

Proposed new major sources and major modifications which would emit a nonattainment pollutant within a designated nonattainment areas, including VOC or NO_x in a designated Ozone Nonattainment Area, shall meet the requirements listed below:

- (1) LAER. The owner or operator of the proposed major source or major modification shall demonstrate that the source or modification will comply with the LAER for each nonattainment pollutant which is emitted at or above the significant emission rate. In the case of a major modification, the requirement for LAER shall apply only to each new or modified emission unit which increases emissions. For phased construction projects, the determination of LAER shall be reviewed at the latest reasonable time prior to commencement of construction of each independent phase.
- (2) Source Compliance. The owner or operator of the proposed major source or major modification shall demonstrate that all major sources owned or operated by such person (or by an entity controlling, controlled by, or under common control with such person) in the state are in

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compliance or on a schedule for compliance, with all applicable emission limitations and standards under the Act.

- (3) Offsets. The owner or operator of the proposed major source or major modification shall provide offsets as specified in OAR 340-28-1960 and 340-28-1970.
- (4) Net Air Quality Benefit. For cases in which emission reductions or offsets are required, the applicant shall demonstrate that a net air quality benefit will be achieved in the affected area as described in OAR 340-28-1970 and that the reductions are consistent with reasonable further progress toward attainment of the air quality standards. Applicants in an ozone nonattainment area shall demonstrate that the proposed VOC or NO_x offsets will result in a 10% net reduction in emissions, as required by OAR 340-28-1970(3)(c).
- (5) Alternative Analysis:
 - (a) The owner or operator of a proposed new major source or major modification shall conduct an alternative analysis for each nonattainment pollutant emitted at or above the significant emission rate, except that no analysis shall be required for TSP;
 - (b) This analysis shall include an evaluation of alternative sites, sizes, production processes, and environmental control techniques for such proposed source or modification which demonstrates that benefits of the proposed source or modification significantly outweigh the environmental and social costs imposed as a result of its location, construction or modification.
- (6) Special Exemption for the Salem Ozone Nonattainment Area. Proposed new major sources and major modifications which are located in or impact the Salem Ozone Nonattainment Area are exempt from OAR 340-28-1970 and sections (3) through (5) of this rule for VOC and NO_x emissions with respect to ozone formation in the Salem Ozone Nonattainment area.
- (7) Special requirements for the Klamath Falls Urban Growth Area, and the Lakeview PM₁₀ Nonattainment Area. For the Klamath Falls Urban Growth Area, and the Lakeview PM₁₀ Nonattainment Area particulate matter or PM₁₀ emission increases of 5.0 or more tons per year shall be fully offset, but the application of LAER is not required unless the emission increase is 15 or more tons per year. At the option of the owner or operator of a source with particulate matter or PM₁₀ emissions of 5.0 or more tons per year but less than 15 tons per year, LAER control technology may be applied in lieu of offsets.

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 25-1981, f. & ef. 9-8-81; DEQ 5-1983, f. & ef. 4-18-83; DEQ 27-1992, f. & ef. 11-12-92; DEQ 4-1993, f. & cert. ef. 3-10-93, Renumbered from 340-20-240, DEQ 13-1993, f. & ef. 9-24-93; DEQ 19-1993, f. & ef. 11-4-93

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the EQC under OAR 340-20-047.]

Prevention of Significant Deterioration Requirements for Sources in Attainment or Unclassified Areas

340-28-1940 New Major Sources or Major Modifications locating in areas designated attainment or unclassifiable shall meet the following requirements:

- (1) BACT. The owner or operator of the proposed major source or major modification shall apply BACT for each pollutant which is emitted at a significant emission rate. In the case of a major modification, the requirement for BACT shall apply only to each new or modified emission unit which increases emissions. For phased construction projects, the determination of BACT shall be reviewed at the latest reasonable time prior to commencement of construction of each independent phase.
- (2) Air Quality Analysis:
 - (a) The owner or operator of the proposed major source or major modification shall demonstrate that the emissions of any pollutant at or above a significant emission rate would not cause or contribute to:
 - (A) An impact greater than significant air quality impact levels at any locality that does not or would not meet any state or national ambient air quality standard;
 - (B) An impact in excess of any applicable increment established by the Prevention of Significant Deterioration (PSD) requirements, OAR 340-31-110; or
 - (C) An impact greater than significant air quality impact levels on a designated nonattainment area. New sources or modifications of sources which would emit VOC or NO_x which may impact the Salem ozone nonattainment area are exempt from this demonstration with respect to ozone formation.
 - (b) The demonstration under subsection (a) of this section shall include the potential to emit from the proposed major source or major modification, in conjunction with all other applicable emission increases and creditable

Attachment A-4

Selected Sections of Division 30

OAR 340-30- 010
OAR 340-30- 043
OAR 340-30- 235
Through 340-30-255

Secretary of State renumbered these new
rules to 340-30-300 through 340-30-340
upon filing 5-1-95.

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DIVISION 30

SPECIFIC AIR POLLUTION
CONTROL RULES FOR AREAS
WITH UNIQUE AIR
QUALITY NEEDS

- 340-30-005 Purposes and Application
340-30-010 Definitions

**Specific Air Pollution Control
Rules for the Medford-Ashland
Air Quality Maintenance Area
and the Grants Pass
Urban Growth Area**

- 340-30-012 Application
340-30-015 Wood Waste Boilers
340-30-021 Veneer Dryer Emission Limitations
340-30-025 Air Conveying Systems (Medford-Ashland AQMA Only)
340-30-030 Wood Particle Dryers at Particleboard Plants
340-30-031 Hardboard Manufacturing Plants
340-30-035 Wigwam Waste Burners
340-30-040 Charcoal Producing Plants
340-30-043 Control of Fugitive Emissions (Medford-Ashland AQMA Only)
340-30-044 Requirement for Operation and Maintenance Plans (Medford-Ashland AQMA Only)
340-30-046 Emission-Limits Compliance Schedules
340-30-050 Continuous Monitoring
340-30-055 Source Testing
340-30-065 New Sources
340-30-067 Rebuilt Sources
340-30-070 Open Burning
340-30-111 Emission Offsets
340-30-115 Dual-Fueling Feasibility Study for Wood-Waste Boilers

**Specific Air Pollution Control Rules for the LaGrande Urban Growth Area and the
Lakeview Urban Growth Area**

- 340-30-200 Application (La Grande Urban Growth Area)
340-30-205 Compliance Schedule for Existing Sources
340-30-210 Wood-Waste Boilers
340-30-215 Wood Particle Dryers at Particleboard Plants
340-30-220 Hardboard Manufacturing Plants

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- 340-30-225 Air Conveying Systems
- 340-30-230 Fugitive Emissions
- 340-30-235 Application (Lakeview Urban Growth Area)
- 340-30-240 Control of Fugitive Emissions
- 340-30-245 Requirement for Operation and Maintenance Plans
- 340-30-250 Source Testing
- 340-30-255 Open Burning

**Specific Air Pollution Control Rules
For Clackamas, Columbia, Multnomah,
And Washington Counties**

- 340-30-400 Application
- 340-30-410 Exclusions
- 340-30-420 Incinerators and Refuse Burning Equipment
- 340-30-430 Concealment and Masking of Emissions
- 340-30-440 Effective Capture of Air Contaminant Emissions
- 340-30-450 Odor Control Measures
- 340-30-460 Storage and Handling of Petroleum Products
- 340-30-470 Ships
- 340-30-480 Upset Condition
- 340-30-490 Emission Standards - General
- 340-30-500 Visible Air Contaminant Standards
- 340-30-510 Particulate Matter Weight Standards
- 340-30-520 Particulate Matter size Standard
- 340-30-530 Sulfur Dioxide Emission Standard
- 340-30-540 Odors

**Specific Air Pollution Control Rules
For Benton, Linn, Marion, Polk,
And Yamhill Counties**

- 340-30-600 Application
- 340-30-610 Odors
- 340-30-620 Particulate Matter Size Standard

DIVISION 30

**SPECIFIC AIR POLLUTION CONTROL
RULES FOR AREAS WITH UNIQUE AIR QUALITY CONTROL NEEDS**

Purpose and Application

340-30-005 The purpose of this Division is to deal specifically with the unique air quality control needs of areas of the state specified in OAR 340-30-012, OAR 340-30-200, OAR 340-30-400 and OAR 340-30-600. This Division shall apply in addition to all other rules of the Environmental Quality Commission. The adoption of this Division shall not, in any way, affect the applicability in the specified areas of all other rules of the Environmental Quality Commission and the latter shall remain in full force and effect, except as expressly provided otherwise. In cases of apparent conflict, the most stringent rule shall apply.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 4-1978, f. & ef. 4-7-78; DEQ 22-1989, f. & cert. ef. 9-26-89; AQ 8-1992, f. & ef. 11/13/91; AQ 1-1993, f. & ef. 3-9-93

Definitions

340-30-010 As used in this Division:

- (1) "Air contaminant" means a dust, fume, gas, mist, odor, smoke, vapor, pollen, soot, carbon, acid or particulate matter, or any combination thereof.
- (2) "Air Conveying System" means an air moving device, such as a fan or blower, associated ductwork, and a cyclone or other collection device, the purpose of which is to move material from one point to another by entrainment in a moving airstream.
- (3) "Average Operating Opacity" means the opacity of emissions determined using EPA Method 9 on any three days within a 12-month period which are separated from each other by at least 30 days ; a violation of the average operating opacity limitation is judged to have occurred if the opacity of emissions on each of the three days is greater than the specified average operating opacity limitation.
- (4) "Charcoal Producing Plant" means an industrial operation which uses the destructive distillation of wood to obtain the fixed carbon in the wood.
- (5) "Collection Efficiency" means the overall performance of the air cleaning device in terms of ratio of weight of material collected to total weight of input to the collector.
- (6) "Department" means Department of Environmental Quality.
- (7) "Design Criteria" means the numerical as well as verbal description of the basis of design, including but not necessarily limited to design flow rates, temperatures, humidities, contaminant descriptions in terms of types and chemical species, mass emission rates, concentrations, and specification of desired results in terms of final emission rates and concentrations, and scopes of vendor supplies and owner-supplied equipment and utilities, and a description of any operational controls.
- (8) "Domestic Waste" means combustible household waste, other than wet garbage, such as paper, cardboard, leaves, yard clippings, wood, or similar materials generated in a dwelling housing four (4) families or less, or on the real property on which the dwelling is situated.
- (9) "Dry Standard Cubic Foot" means the amount of gas that would occupy a volume of one cubic foot, if the gas were free of uncombined water at standard conditions.
- (10) "Emission" means a release into the outdoor atmosphere of air contaminants.
- (11) "EPA Method 9" means the method for Visual Determination of the Opacity of Emissions From Stationary Sources as promulgated by the U.S. Environmental Protection Agency in **Title 40 of the Code of Federal Regulations, Part 60, Appendix A, Method 9.**
- (12) "Facility" means an identifiable piece of process equipment. A stationary source may be comprised of one or more pollutant-emitting facilities.

- (13) "Fuel Burning Equipment" means a device which burns a solid, liquid, or gaseous fuel, the principal purpose of which is to produce heat, except marine installations and internal combustion engines that are not stationary gas turbines.
- (14) "Fuel Moisture Content By Weight Greater Than 20 Percent" means bark, hogged wood waste, or other wood with an average moisture content of more than 20 percent by weight on a wet basis as used for fuel in the normal operation of a wood-fired veneer dryer as measured by ASTM D4442-84 during compliance source testing.
- (15) "Fuel Moisture Content By Weight Less Than 20 Percent" means pulverized ply trim, sanderdust, or other wood with an average moisture content of 20 percent or less by weight on a wet basis as used for fuel in the normal operation of a wood-fired veneer dryer as measured by ASTM D4442-84 during compliance source testing.
- (16) "Fugitive Emissions" means dust, fumes, gases, mist, odorous matter, vapors, or any combination thereof not easily given to measurement, collection and treatment by conventional pollution control methods.
- (17) "General Arrangement", in the context of the compliance schedule requirements in section 340-32-045(2), means drawings or reproductions which show as a minimum the size and location of the control equipment on a source plot plan, the location of equipment served by the emission-control system, and the location, diameter, and elevation above grade of the ultimate point of discharging contaminants to the atmosphere.
- (18) "Grants Pass Urban Growth Area" and "Grants Pass Area" means the area within the Grants Pass Urban Growth Boundary as shown on the Plan and Zoning Maps for the City of Grants Pass as of 1 February 1988.
- (19) "Hardboard" means a flat panel made from wood that has been reduced to basic wood fibers and bonded by adhesive properties under pressure.
- (20) "La Grande Urban Growth Area" means the area within the La Grande Urban Growth Boundary as shown on the Plan and Zoning Maps for the City of La Grande as of 1 October 1991.
- (21) "Lakeview Urban Growth Area" means the area within the Lakeview Urban Growth Boundary as shown on the Plan and Zoning Maps for the Town of Lakeview as of 25 October 1993.**
- ~~(22)~~~~(21)~~ "Lowest Achievable Emission Rate" or "LAER" is defined by section 340-20-225
- ~~(23)~~~~(22)~~ "Maximum Opacity" means the opacity as determined by EPA Method 9 (average of 24 consecutive observations).
- ~~(24)~~~~(23)~~ "Medford-Ashland Air Quality Maintenance Area" and "Medford-Ashland AQMA" is defined as beginning at a point approximately one mile NE of the town of Eagle Point, Jackson County, Oregon, at the NE corner of Section 36, T35S, R1W; thence south along the Willamette Meridian to the SE corner of Section 25, T37S, R1W; thence SE along a line to the SE corner of Section 9, T39S, R2E; thence SSE to the corner of Section 22, T39S, R2E; thence south to the SE corner of Section 27, T39S, R2E; thence SW to the SE corner of Section 33, T39S, R2E; thence NW to the NW corner of Section 36, T39S, R1E; thence west to the SW corner of Section 26, T39S, T1E; thence west to the SW corner of Section 12, T39S, R1W; thence NW along a line to the SW corner of Section 20, T38S, R1W; thence west to the SW corner of Section 24, T38S, R2W; thence NW along a line to the SW corner of Section 4, T38S, R2W; thence west to the SW corner of Section 5, T38S, R2W; thence NW along a line to the SW corner of Section 31, T37S, R2W; thence north along a line to the Rogue River, thence north and east along the Rogue River to the north boundary of Section 32, T35S, R1W; thence east along a line to the point of beginning.
- ~~(25)~~~~(24)~~ "Modified Source" means any source with a "major modification" as defined in OAR 340-20-225.
- ~~(26)~~~~(25)~~ "New Source" means any source not in existence prior to April 7, 1978 or any source not having an Air Contaminant Discharge Permit as of April 7, 1978.
- ~~(27)~~~~(26)~~ "Odor" means that property of an air contaminant that affects the sense of smell.
- ~~(28)~~~~(27)~~ "Offset" is defined by OAR 340-20-225.
- ~~(29)~~~~(28)~~ "Opacity" means the degree to which an emission reduces transmission of light and obscures the view of an object in the background as measured in accordance with the Department's Source Sampling Manual.

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- ~~(30)~~~~(29)~~ "Open Burning" means burning conducted in such a manner that combustion air and combustion products may not be effectively controlled including, but not limited to, burning conducted in open outdoor fires, burn barrels, and backyard incinerators.
- ~~(31)~~~~(30)~~ "Particleboard" means matformed flat panels consisting of wood particles bonded together with synthetic resin or other suitable binders.
- ~~(32)~~~~(31)~~ "Particulate Matter" means all solid or liquid material, other than uncombined water, emitted to the ambient air as measured in accordance with the Department Source Sampling Manual. Particulate matter emission determinations shall consist of the average of three separate consecutive runs. For sources tested using DEQ Method 5 or DEQ Method 7, each run shall have a minimum sampling time of one hour, a maximum sampling time of eight hours, and a minimum sampling volume of 31.8 dscf. For sources tested using DEQ Method 8, each run shall have a minimum sampling time of 15 minutes and shall collect a minimum particulate sample of 100 mg. Wood waste boilers and charcoal producing plants shall be tested with DEQ Method 5; veneer dryers, wood particle dryers, fiber dryers and press/cooling vents shall be tested with DEQ Method 7; and air conveying systems shall be tested with DEQ Method 8.
- ~~(33)~~~~(32)~~ "Person" includes individuals, corporations, associations, firms, partnerships, joint stock companies, public and municipal corporations, political subdivisions, the state and any agencies thereof, and the federal government and any agencies thereof.
- ~~(34)~~~~(33)~~ "Rebuilt Boiler" means a physical change after April 29, 1988, to a wood-waste boiler or its air-contaminant emission control system which is not considered a "modified source" and for which the fixed, depreciable capital cost of added or replacement components equals or exceeds fifty percent of the fixed depreciable cost of a new component which has the same productive capacity.
- ~~(35)~~~~(34)~~ "Source" means any structure, building, facility, equipment, installation or operation, or combination thereof, which is located on one or more contiguous or adjacent properties and which is owned or operated by the same person, or by persons under common control.
- ~~(36)~~~~(35)~~ "Standard Conditions" means a temperature of 60 degrees Fahrenheit (15.6 degrees Celsius) and a pressure of 14.7 pounds per square inch absolute (1.03 Kilograms per square centimeter).
- ~~(37)~~~~(36)~~ "Veneer" means a single flat panel of wood not exceeding 1/4 inch in thickness formed by slicing or peeling from a log.
- ~~(38)~~~~(37)~~ "Veneer Dryer" means equipment in which veneer is dried.
- ~~(39)~~~~(38)~~ "Wood-fired Veneer Dryer" means a veneer dryer which is directly heated by the products of combustion of wood fuel in addition to or exclusive of steam or natural gas or propane combustion.
- ~~(40)~~~~(39)~~ "Wigwam Waste Burner" means a burner which consists of a single combustion chamber, has the general features of a truncated cone, and is used for the incineration of wastes.
- ~~(41)~~~~(40)~~ "Wood ~~Waste~~ Fired Boiler" means equipment which uses indirect heat transfer from the products of combustion of wood waste to provide heat or power.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

[Publications: The Publication(s) referred to or incorporated by reference in this rule are available from the office of the Department of Environmental Quality.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 4-1978, f. & ef. 4-7-78; DEQ 9-1979, f. & ef. 5-3-79; DEQ 3-1980, f. & ef. 1-28-80; DEQ 14-1981, f. & ef. 5-6-81; DEQ 22-1989, f. & cert. ef. 9-26-89; AQ 8-1992, f. & ef. 11/13/91; AQ 1-1993, f. & ef. 3-9-93

Control of Fugitive Emissions (Medford-Ashland AQMA Only)

340-30-043

- (1) Large sawmills, all plywood mills and veneer manufacturing plants, particleboard and hardboard plants, charcoal manufacturing plants, stationary asphalt plants, stationary rock crushers, and sources subject to OAR 340-21-245 or 340-30-230 shall prepare and implement site-specific plans for the control of fugitive emissions. (The air contaminant sources listed are described in OAR 340-28-1720, Table 4 [~~20-155, Table 1~~], paragraphs 10a, 14a, 14b, 15, 17, 18, 29, 34a and 42a, respectively.)
- (2) Fugitive emission control plans shall identify reasonable measures to prevent particulate matter from becoming airborne. Such reasonable measures shall include, but not be limited to the following:
 - (a) Scheduled application of asphalt, oil, water, or other suitable chemicals on unpaved roads, log storage or sorting yards, materials stockpiles, and other surfaces which can create airborne dust;
 - (b) Full or partial enclosure of materials stockpiled in cases where application of oil, water, or chemicals are not sufficient to prevent particulate matter from becoming airborne;
 - (c) Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials;
 - (d) Adequate containment during sandblasting or other similar operations;
 - (e) Covering, at all times when in motion, open bodied trucks transporting materials likely to become airborne; and
 - (f) Procedures for the prompt removal from paved streets of earth or other material which does or may become airborne.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 6-1983, f. & ef. 4-18-83; DEQ 22-1989, f. & cert. ef. 9-26-89; AQ 1-1993, f. & ef. 3-9-93

Requirement for Operation and Maintenance Plans (Medford-Ashland AQMA Only)

340-30-044

- (1) Operation and Maintenance Plans shall be prepared by all holders of Air Contaminant Discharge Permits except minimal source permits and special letter permits. All sources subject to regular permit requirements shall be subject to operation and maintenance requirements.
- (2) The purposes of the operation and maintenance plans are to:
 - (a) Reduce the number of upsets and breakdowns in particulate control equipment;
 - (b) Reduce the duration of upsets and downtimes; and
 - (c) Improve the efficiency of control equipment during normal operations.
- (3) The operation and maintenance plans should consider, but not be limited to, the following:
 - (a) Personnel training in operation and maintenance;
 - (b) Preventative maintenance procedures, schedule and records;
 - (c) Logging of the occurrence and duration of all upsets, breakdowns and malfunctions which result in excessive emissions;
 - (d) Routine follow-up evaluation of upsets to identify the cause of the problem and changes needed to prevent a recurrence;
 - (e) Periodic source testing of pollution control units as required by air contaminant discharge permits;
 - (f) Inspection of internal wear points of pollution control equipment during scheduled shutdowns; and
 - (g) Inventory of key spare parts.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 6-1983, f. & ef. 4-18-83; DEQ 22-1989, f. & cert. ef. 9-26-89; AQ 1-1993, f. & ef. 3-9-93

The Lakeview Urban Growth Area

SOS filed as 340-30-300

SOS changed this number to

Application

340-30-235 OAR 340-30-235 through 340-30-255 shall apply in the Lakeview Urban Growth Area.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: AQ 8-1992, f. & ef. 11/13/91; AQ 1-1993, f. & ef. 3-9-93

340-30-310

Control of Fugitive Emissions

340-30-240 (1) Large sawmills, all plywood mills and veneer manufacturing plants, particleboard and hardboard plants, charcoal manufacturing plants, stationary asphalt plants, stationary rock crushers, and sources subject to OAR 340-21-245 shall prepare and implement site-specific plans for the control of fugitive emissions.

(2) Fugitive emission control plans shall identify reasonable measures to prevent particulate matter from becoming airborne. Such reasonable measures shall include, but not be limited to the following:

- (a) Scheduled application of asphalt, oil, water, or other suitable chemicals on unpaved roads, log storage or sorting yards, materials stockpiles, and other surfaces which can create airborne dust;
- (b) Full or partial enclosure of materials stockpiled in cases where application of oil, water, or chemicals are not sufficient to prevent particulate matter from becoming airborne;
- (c) Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials;
- (d) Adequate containment during sandblasting or other similar operations;
- (e) Covering, at all times when in motion, open bodied trucks transporting materials likely to become airborne; and
- (f) Procedures for the prompt removal from paved streets of earth or other material which does or may become airborne.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 6-1983, f. & ef. 4-18-83; DEQ 22-1989, f. & cert. ef. 9-26-89; AQ 1-1993, f. & ef. 3-9-93

SOS change rule # to 340-300 upon filing

Requirement for Operation and Maintenance Plans

340-30-245

(1) Operation and Maintenance Plans shall be prepared by all holders of Air Contaminant Discharge Permits except minimal source permits and special letter permits. All sources subject to regular permit requirements shall be subject to operation and maintenance requirements.

(2) The purposes of the operation and maintenance plans are to:

- (a) Reduce the number of upsets and breakdowns in particulate control equipment;
- (b) Reduce the duration of upsets and downtimes; and
- (c) Improve the efficiency of control equipment during normal operations.

(3) The operation and maintenance plans should consider, but not be limited to, the following:

- (a) Personnel training in operation and maintenance;
- (b) Preventative maintenance procedures, schedule and records;
- (c) Logging of the occurrence and duration of all upsets, breakdowns and malfunctions which result in excessive emissions;
- (d) Routine follow-up evaluation of upsets to identify the cause of the problem and changes needed to prevent a recurrence;

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- (e) Periodic source testing of pollution control units as required by air contaminant discharge permits;
- (f) Inspection of internal wear points of pollution control equipment during scheduled shutdowns; and
- (g) Inventory of key spare parts.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 6-1983, f. & ef. 4-18-83; DEQ 22-1989, f. & cert. ef. 9-26-89; AQ 1-1993, f. & ef. 3-9-93

Source Testing

340-30-250

- SOS changed rate number to 340-30-330 upon 8/1/94*
- (1) The person responsible for the following sources of particulate emissions shall make or have made tests to determine the type, quantity, quality, and duration of emissions, and/or process parameters affecting emissions, in conformance with test methods on file with the Department at the following frequency: Wood Waste Boilers with total heat input equal to or greater than 35 million Btu/hr. - Once every three years;

Open Burning

340-30-255 No open burning of domestic waste shall be initiated on any day or at any time when the local air stagnation advisory forecasts adverse meteorological or air quality conditions.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 4-1978, f. & ef. 4-7-78; AQ 1-1993, f. & ef. 3-9-93

Attachment A-5

Selected Sections of Division 21

OAR 340-21-010

OAR 340-21-012

OAR 340-21-200

DIVISION 21

**GENERAL EMISSION STANDARDS
FOR PARTICULATE MATTER**

[**ED. NOTE:** Administrative Order DEQ 16 repealed previous rules OAR 340-21-005 through 340-21-031 (consisting of AP 1, filed 1-14-57; and SA 16, filed 2-13-62).]

Definitions

340-21-005 As used in OAR 340-21-005 through 340-21-060:

- (1) "Coastal Areas" means Clatsop, Tillamook, Lincoln, Coos, and Curry Counties and those portions of Douglas and Lane County west of Range 8 West, Willamette Meridian.
- (2) "Fuel burning equipment" means equipment, other than internal combustion engines, the principal purpose of which is to produce heat or power by indirect heat transfer.
- (3) "Municipal Waste Incinerator" means a device used to reduce the volume of general household wastes by combustion which is capable of processing more than 200 lb/hr of such wastes but which is too small to be classed as a major source as defined by the Department's New Source Review rule, OAR 340-20-220 to 340-20-275.
- (4) "New source" means any air contaminant source installed, constructed, or modified after June 1, 1970.
- (5) "Opacity" means the degree to which an emission reduces transmission of light and obscures the view of an object in the background as measured in accordance with the Department's Source Sampling Manual.
- (6) "Particulate matter" means any matter, except uncombined water, which exists as a liquid or solid at standard conditions.
- (7) "Refuse" means unwanted matter.
- (8) "Refuse burning equipment" means a device designed to reduce the volume of solid, liquid, or gaseous refuse by combustion.
- (9) "Ringlemann Smoke Chart" means the Ringlemann Smoke Chart with instructions for use as published in **May, 1967**, by the **U.S. Department of Interior, Bureau of Mines**.
- (10) "Standard conditions" means a temperature of 68° Fahrenheit and a pressure of 14.7 pounds per square inch absolute.
- (11) "Standard cubic foot" means the amount of gas that would occupy a volume of one cubic foot, if the gas were free of uncombined water at standard conditions. When applied to combustion flue gases from fuel or refuse burning, "standard cubic foot" also implies adjustment of gas volume to that which would result at a concentration of 12% carbon dioxide or 50% excess air.

[**NOTE:** This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

[**Publications:** The publication(s) referred to or incorporated by reference in this rule are available from the office of the Department of Environmental Quality.]

Stat. Auth.: ORS Ch. 468 & 468A

Hist.: DEQ 16, f. 6-12-70, ef. 7-11-70; DEQ 1-1984, f. & ef. 1-16-84; AQ 1-1993, f. & ef. 3-9-93

Special Control Areas

340-21-010 As used in OAR 340-21-005 through 340-21-060, [~~are applicable to the following areas of the state established as~~] special control areas **means:**

- (1) The counties within the Willamette Valley, including Benton, Clackamas, Columbia, Lane, Linn, Marion, Multnomah, Polk, Washington and Yamhill counties.
- (2) Umpqua Basin, defined as the area bounded by the following line: Beginning at the SW corner of Section 2, T19S, R9W, on the Douglas-Lane County lines and extending due south to the SW corner of Section 14, T32S, R9W, on the Douglas-Curry County lines; thence easterly on the Douglas-Curry and Douglas-Josephine County lines to the intersection of the Douglas, Josephine, and Jackson County lines; thence easterly on the Douglas-Jackson County line to the intersection of the Umpqua National Forest boundary on the NW corner of Section 32, T32S, R3W; thence northerly on the Umpqua National Forest boundary to the NE corner of Section 36, T25S, R2W; thence west to the NW corner of Section 36, T25S, R4W; thence north to the Douglas-Lane County line; thence westerly on the Douglas-Lane County line to the starting point.
- (3) Rogue Basin, defined as the area bounded by the following line: Beginning at the NE corner of T32S, R2E, W.M.; thence south along range line 2E to the SE corner of T39S; thence west along township line 39S to the NE corner of T40S, R7W; thence south to the SE corner of T40S, R7W; thence west to the SE corner of T40S, R9W; thence north on range line 9W to the NE corner of T39S, R9W; thence east to the NE corner of T39S, R8W; thence north on range line 8W to the SE corner of Section 1, T33S, R8W on the Josephine-Douglas County line; thence east on the Josephine-Douglas and Jackson-Douglas County lines to the NE corner of T32S, R1W; thence east along township line 32S to the NE corner of T32S, R2E to the point of beginning.
- (4) Within incorporated cities having a population of four thousand (4000) or more, and within three (3) miles of the corporate limits of any such city.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A
Hist.: DEQ 16, f. 6-12-70, ef. 7-11-70; AQ 1-1993, f. & ef. 3-9-93

Opacity and Grain Loading Standards

Applicability

340-21-012 OAR 340-21-012 through 340-21-030 apply in all areas of the state.

Visible Air Contaminant Limitations

340-21-015

- (1) Existing sources outside special control areas. No person shall cause, suffer, allow, or permit the emission of any air contaminant into the atmosphere from any existing air contaminant source located outside a special control area for a period or periods aggregating more than three minutes in any one hour which is:
 - (a) As dark or darker in shade as that designated as No. 2 on the Ringlemann Chart; or
 - (b) Equal to or greater than 40% opacity.
- (2) New sources in all areas and existing sources within special control areas: No person shall cause, suffer, allow, or permit the emission of any air contaminant into the atmosphere from any new air contaminant source, or from any existing source within a special control area, for a period or periods aggregating more than three minutes in any one hour which is:
 - (a) As dark or darker in shade as that designated as No. 1 on the Ringlemann Chart; or
 - (b) Equal to or greater than 20% opacity.
- (3) Exceptions to sections (1) and (2) of this rule:
 - (a) Where the presence of uncombined water is the only reason for failure of any emission to meet the requirements of sections (1) and (2) of this rule, such sections shall not apply;
 - (b) Existing fuel burning equipment utilizing wood wastes and located within special control areas shall comply with the emission limitations of section (1) of this rule in lieu of section (2) of this rule.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A
Hist.: DEQ 16, f. 6-12-70, ef. 7-11-70; AQ 1-1993, f. & ef. 3-9-93

Fuel Burning Equipment Limitations

340-21-020

- (1) No person shall cause, suffer, allow, or permit the emission of particulate matter from any fuel burning equipment in excess of:
 - (a) 0.2 grains per standard cubic foot for existing sources;
 - (b) 0.1 grains per standard cubic foot for new sources.
- (2) For sources burning salt laden wood waste on July 1, 1981, where salt in the fuel is the only reason for failure to comply with the above limits and when the salt in the fuel results from storage or transportation of logs in salt water, the resulting salt portion of the emissions shall be exempted from subsection (1)(a) or (b) of this rule and OAR 340-21-015. In no case shall sources burning salt laden wood waste exceed 0.6 grains per standard cubic foot. Sources which utilize this exemption, to demonstrate compliance otherwise with subsection (1)(a) or (b) of this rule, shall:
 - (a) Not exceed a darkness of Ringleman 2 from the boiler stacks for more than three minutes in any one hour;
 - (b) Submit the results of a particulate emissions source test of the boiler stacks bi-annually.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth.: ORS Ch. 468 & 468A
Hist.: DEQ 16, f. 6-12-70, ef. 7-11-70; DEQ 12-1979, f. & ef. 6-8-79; DEQ 6-1981, f. & ef. 2-17-81; DEQ 18-1982, f. & ef. 9-1-82; AQ 1-1993, f. & ef. 3-9-93

Refuse Burning Equipment Limitations

340-21-025

No person shall cause, suffer, allow, or permit the emission of particulate matter from any refuse burning equipment in excess of:

- (1) For equipment designed to burn 200 pounds of refuse per hour or less, 0.3 grains per standard cubic foot; or
- (2) For equipment designed to burn more than 200 pounds of refuse per hour:
 - (a) 0.2 grains per standard cubic foot for existing sources; or
 - (b) 0.1 grains per standard cubic foot for new sources, except that small to medium size municipal waste incinerators located in coastal areas as defined in OAR 340-21-005(1) shall be subject to OAR 340-21-027 and larger municipal incinerators shall be subject to provisions of OAR ~~340-220~~25-850 through 340-~~276~~25-885.

[NOTE: Sources subject to this rule may also be subject to OAR 340-25-850 through 340-25-905.]

Removable Label

340-21-150 [Renumbered to 340-34-075]

Label Approval

340-21-155 [Renumbered to 340-34-080]

Laboratory Accreditation Requirements

340-21-160 [Renumbered to 340-34-085]

Accreditation Criteria

340-21-165 [Renumbered to 340-34-090]

Application for Laboratory Efficiency Accreditation

340-21-170 [Renumbered to 340-34-095]

On-Site Laboratory Inspection and Stove Testing Proficiency Demonstration

340-21-175 [Renumbered to 340-34-100]

Accreditation Application Deficiency, Notification and Resolution

340-21-180 [Renumbered to 340-34-105]

Final Department Administrative Review and Certificate of Accreditation

340-21-185 [Renumbered to 340-34-110]

Civil Penalties, Revocation, and Appeals

340-21-190 [Renumbered to 340-34-115]

Industrial Contingency Requirements for Selected PM₁₀ Nonattainment Areas

Purpose

340-21-200 OAR 340-21-200 through 340-21-245 establish contingency control requirements for existing industrial sources in the following PM₁₀ nonattainment areas: Medford-Ashland; GrantsPass; Klamath Falls; La Grande. ~~[as required under section 172(c) of the Clean Air Act.]~~ These requirements become effective in the ~~the~~ PM₁₀ nonattainment area if the area fails to attain the national ambient air quality standard for PM₁₀ by the applicable attainment date in the Clean Air Act.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth: ORS Ch. 468 & 468A

Hist.: AQ 6-1992, f.& ef. 11-13-91; AQ 1-1993, f. & ef. 3-9-93

Relation to Other Rules

340-21-205 OAR 340-21-200 through 340-21-245 shall apply in addition to all other rules of the Environmental Quality Commission. The adoption of these rules shall not, in any way, affect the applicability of all other rules of the Environmental Quality Commission and the latter shall remain in full force and effect, except as expressly provided otherwise. In cases of apparent conflict, the most stringent rule shall apply.

[NOTE: This rule is included in the State of Oregon Clean Air Act Implementation Plan as adopted by the Environmental Quality Commission under OAR 340-20-047.]

Stat. Auth: ORS Ch. 468 & 468A

Hist.: AQ 6-1992, f.& ef. 11-13-91; AQ 1-1993, f. & ef. 3-9-93

Applicability

340-21-210

- (1) OAR 340-21-200 through 340-21-245 shall apply in a PM₁₀ nonattainment area upon publication by EPA of notice in the Federal Register that the area has failed to attain the national ambient air quality standard for PM₁₀ by the attainment date required in the Clean Air Act.
- (2) (a) OAR 340-21-200 through 340-21-245 shall apply to a major source located outside of a PM₁₀ nonattainment area upon a determination by the Department based upon a study conducted under subsection (b) of this section that the source has a significant impact on a PM₁₀ nonattainment area affected under section (1) of this rule.
(b) Upon request of the Department, the owner or operator of any source with the potential to have a significant impact on a PM₁₀ nonattainment area shall conduct, prior to the

Attachment A-6

Revisions to the Operational Guidance To The
Oregon Smoke Management Program

ATTACHMENT A-6

OPERATIONAL GUIDANCE TO THE OREGON SMOKE MANAGEMENT PROGRAM

Appendix 4

Special Protection Zone Requirements

Special Protection Zone (SPZ) boundaries are shown in the maps in this appendix.

These Special Protection Zones ~~and these provisions shall be in effect~~ apply to the following PM10 nonattainment areas from November 15 through February 15 each year: Klamath Falls, Medford, Oakridge, La Grande and Lakeview. The Lakeview SPZ shall go into effect November 15, 1995. ~~The zones shall initially be in effect for Klamath Falls, Medford, and Oakridge as of November 15, 1992. The zones shall initially be in effect for Grants Pass, Eugene and La Grande beginning November 15, 1993.~~ Only the contingency plan requirements of this appendix shall apply to the Eugene/Springfield and Grants Pass PM10 nonattainment areas. The SPZ provisions will be implemented through the Smoke Management Plan provisions for Medford, Grants Pass, and Oakridge and Eugene, and will be implemented through voluntary landowner plans for Klamath Falls, and La Grande and Lakeview.

Prescribed burning in the SPZ will be allowed only when the smoke management meteorologist believes there will be no measurable smoke impacts within the PM10 nonattainment area.

Landowners are responsible for intermittent monitoring for at least 3 days to ensure the smoke is not causing an impact in the nonattainment city. ODF can provide a waiver to this provision if it believes that the monitoring is unnecessary on a specific burn unit. Landowners must provide a level of mopup, as directed by ODF, which will prevent or minimize smoke impacts upon the PM10 nonattainment areas.

Between December 1, and February 15, no new ignitions will be allowed in the SPZ on a day that a "Red" day has been declared through the local woodstove curtailment program. No pile burning will be allowed if ODF believes that the piles will produce significant smoke after the third day.

The ~~Zones and the~~ SPZ provisions will apply as long as the city is in PM10 nonattainment status, or if it is jointly determined by the Oregon Department of Environmental Quality (DEQ), ODF, and the Lane Regional Air Pollution Authority that a specific SPZ is no longer needed for attainment or maintenance of the PM10 standard. ~~Zones~~ An SPZ will be developed by ODF and these provisions will apply for any newly declared PM10 nonattainment area. The new ~~Zones~~ SPZ will go into effect on November 15 in the year the area is declared out of attainment, except if the area is declared out of attainment after June 1, in which case the

new ~~Zone~~ SPZ will apply on November 15 of the following year and prescribed burning is demonstrated to be a significant source.

Contingency Plan Requirements:

In the event that areas violate the PM10 standards beyond statutory deadlines and prescribed burning is demonstrated to be a significant source, the following provisions will be implemented:

1. SPZ boundaries will be expanded to include the area from which burning could have a significant impact during the nonattainment period. The boundaries will be jointly agreed to by ODF and DEQ.
2. SPZ restrictions will apply November 1 to March 1, except in Klamath Falls. The SPZ ~~Zones~~ will be in effect November 1 to April 1 in Klamath Falls.
3. The ~~Special Protection Zones~~ SPZ around Klamath Falls, and La Grande and Lakeview, as well as all future PM10 nonattainment areas, will have mandatory smoke management programs during the time when the ~~Zones are~~ SPZ is in effect. The nonattainment city shall be a Designated Area when the SPZ is in effect.
4. Prescribed burning will be prohibited within the ~~Special Protecting Zone~~ SPZ during December and January if an impact of 5 to 10 micrograms per cubic meter, 24 hour average, is demonstrated by air quality monitoring, after the contingency provisions are in effect. Burning will be prohibited November 1 to March 1 if an impact of 10 micrograms per cubic meter, 24 hour average, as demonstrated by monitoring, after the contingency provisions to into effect. ODF and DEQ must jointly agree on the magnitude and duration of the impact, before these provisions are enacted, and apply only to burning from the SPZ during the SPZ protection period.

NOTICE OF PROPOSED RULEMAKING HEARING

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

Department of Environmental Quality

Air Quality Division

OAR Chapter 340

DATE: February 16, 1995
TIME: 7:00pm
LOCATION: Lakeview Town Hall
525 N. First Street
Lakeview, OR

HEARINGS OFFICER(s): David Collier

STATUTORY AUTHORITY: ORS 468A.035 General Comprehensive Plan

ADOPT:

1. PM₁₀ Control Strategy for the Lakeview PM₁₀ Nonattainment Area
2. Establish a Lakeview Special Protection Zone.
3. Related housekeeping and conforming rule amendment, with one unrelated housekeeping rule amendment to Division 21.

AMEND:

- OAR Division 34: Sections 005, 150, 200, 210
- OAR Division 28: Sections 110, 1930
- OAR Division 30: Sections 010, 043, 235 through 255
- OAR Division 21: Sections 010, 012, 200

REPEAL:

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

SUMMARY:

Ambient air quality in the Town of Lakeview, Oregon (population 4,600) has repeatedly violated the 24-hour national ambient air quality health standard for respirable particulate (PM₁₀). As a result, Lakeview has been designated by the Environmental Protection Agency as a moderate PM₁₀ Nonattainment Area. This requires the state to develop an emission control strategy which will reduce PM₁₀ emissions and demonstrate compliance with standards by dates specified in the Clean Air Act. The Lakeview Attainment Plan contains specific Reasonably Available Control Measures (RACM) designed to reduce PM10 emissions from significant emission source categories within the nonattainment area boundary. RACM provisions include a voluntary woodburning curtailment and woodheating public information program, as well as restrictions on residential open burning. Also included in the attainment plan is a noncertified woodstove replacement program administered by the Town of Lakeview. The plan also includes fugitive dust RACM for road sanding and industrial facilities. Contingency measures which would automatically go into effect if the area fails to meet Reasonable Further Progress (RFP) milestones or attain the standard by the Clean Air Act deadline of December 31, 1999 include a mandatory woodstove curtailment program and removal and destruction of uncertified woodstoves upon sale of home.

The control strategy has been designed to assure attainment with the national ambient air quality health standard for PM₁₀ (24-hour average), and meet the requirements of the Clean Air Act.

This proposal contains amendments to the Oregon Smoke Management Plan, made by the Oregon department of Forestry, establishing a forestry slash burning Special Protection Zone (SPZ) for Lakeview. This proposal also includes housekeeping and conforming rule amendments. The Smoke Management Plan was also be amended to eliminate the existing Special Protection Zones for the Eugene-Springfield and Grants Pass PM₁₀ Nonattainment Areas. These SPZ's are believed to be no longer necessary given that little prescribed burning takes place during the winter heating season, and that wintertime PM₁₀ levels have been well below the standard for many years.

This proposal includes one unrelated housekeeping amendment to Division 21 in order to clarify the intent of the rule.

LAST DATE FOR COMMENT: February 22, 1995 5:00pm

DATE PROPOSED TO BE EFFECTIVE: Upon adoption by the Environmental Quality Commission (April 14, 1995) and subsequent filing with the Secretary of State.

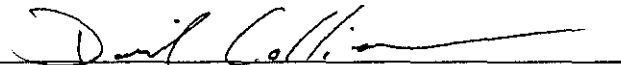
AGENCY RULES COORDINATOR: Chris Rich, (503) 229-6775

AGENCY CONTACT FOR THIS PROPOSAL: David Collier, (503) 229-5177

ADDRESS: Air Quality Division
811 S. W. 6th Avenue
Portland, Oregon 97204

TELEPHONE: (503) 229-5177
or Toll Free 1-800-452-4011

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


Signature

12/14/94
Date

Date: January 3, 1995

To: Interested and Affected Public

Subject: **Rulemaking Proposal - Proposed Lakeview PM₁₀ Attainment Plan and associated rule changes.**

This memorandum contains information on a proposal by the Department of Environmental Quality (DEQ) to adopt new air quality rules and rule amendments related to the Town of Lakeview PM₁₀ Nonattainment Area. This proposal contains the following:

- (1) A PM₁₀ Control Strategy for the Lakeview PM₁₀ Nonattainment Area.
- (2) Revisions to the Special Protection Zone (SPZ) provisions of the Department of Forestry Oregon Smoke Management Program.
- (3) Minor housekeeping and conforming amendments.

These rules/rule amendments, if adopted, would be submitted to the Environmental Protection Agency as a revision to the Oregon Clean Air Act Implementation Plan.

What's in this Package?

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

- | | |
|--------------|--------------------------------------------------------------------------------|
| Attachment A | The actual language of the proposed rule (amendments). |
| | 1) Lakeview PM ₁₀ Control Plan |
| | 2) Selected Sections of Division 34 |
| | 3) Selected Sections of Division 28 |
| | 4) Selected Sections of Division 30 |
| | 5) Selected Sections of Division 21 |
| | 6) Amendments to the Operational Guidance For The Oregon Smoke Management Plan |

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

Memo To: Interested and Affected Public
January 3, 1995
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- Attachment B The "Legal Notice" of the Rulemaking Hearing. (required by ORS 183.335)
- Attachment C The official Rulemaking Statements for the proposed rulemaking action. (required by ORS 183.335)
- Attachment D The official statement describing the fiscal and economic impact of the proposed rule. (required by ORS 183.335)
- Attachment E A statement providing assurance that the proposed rules are consistent with statewide land use goals and compatible with local land use plans.
- Attachment F Questions to be Answered to Reveal Potential Justification for Differing from Federal Requirements.

Hearing Process Details

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

Date: February 16, 1995
Time: 7:00 pm
Place: Lakeview Town Hall
 525 N. 1st Street
 Lakeview, OR 97630

Deadline for submittal of Written Comments: February 22, 1995, 5 p.m.

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

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

What Happens After the Public Comment Period Closes

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

The EQC will consider the Department's recommendation for rule adoption during one of their regularly scheduled public meetings. The targeted meeting date for consideration of this rulemaking proposal is April 14, 1995. This date may be delayed if needed to provide additional time for evaluation and response to testimony received in the hearing process. You will be notified of the time and place for final EQC action if you present oral testimony at the hearing or submit written comment during the comment period or ask to be notified of the proposed final action on this rulemaking proposal.

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

Background on Development of the Rulemaking Proposal

What is the problem

Ambient air quality in the Town of Lakeview, Oregon (population 4,600) has repeatedly violated the 24-hour national ambient air quality health standard for respirable particulate (PM_{10}). As a result, Lakeview has been designated by the Environmental Protection Agency as a moderate PM_{10} Nonattainment Area. Exposure to respirable particulate matter (PM_{10}) is of concern because of human health effects such as changes in lung functions and increased respiratory symptoms, aggravation of existing respiratory and cardiovascular disease, alteration in the body's defense system against foreign materials, damage to lung tissue, increased risk of cancer and, in extreme cases, premature death. Most sensitive to the effects of respirable particulate matter are people with chronic

obstructive pulmonary cardiovascular disease and those with influenza, asthmatics, the elderly, children and mouth-breathers.

The redesignation of Lakeview to nonattainment requires the Department to develop a PM₁₀ emission control strategy which will reduce emissions and demonstrate compliance with standards by dates specified in the Clean Air Act. It also requires miscellaneous minor related housekeeping and conforming rule amendments. Another unrelated minor housekeeping amendment to Division 21 is needed in order to clarify the intent of the rule.

In addition, Lakeview, like the other PM₁₀ Nonattainment Areas in Oregon, needs to have a Special Protection Zone (SPZ) established around the community in order to prevent prescribed burning smoke from contributing to existing PM₁₀ levels during the winter heating season. This SPZ would consist of a 20 mile zone around Lakeview, where certain voluntary burning restrictions would apply between November 15 and February 15th each year.

Two other PM₁₀ nonattainment areas - Eugene/Springfield and Grants Pass - no longer need their SPZs, as only minor prescribed burning now takes place during the winter months around these areas.

How does this proposed rule help solve the problem

The Lakeview control strategy has been designed to ensure attainment with the national ambient air quality health standard for PM₁₀ (24-hour average), and meet the requirements of the Clean Air Act. The Lakeview PM₁₀ control strategy contains specific Reasonably Available Control Measures (RACM) designed to reduce PM₁₀ emissions from significant emission source categories within the nonattainment area boundary. RACM provisions include a voluntary woodburning curtailment and woodheating public information program, as well as restrictions on residential open burning. Included in the attainment plan is a noncertified woodstove replacement program administered by the Town of Lakeview. The plan also includes fugitive dust RACM provisions for road sanding and industrial facilities. Contingency measures which would automatically go into effect if the area fails to meet Reasonable Further Progress (RFP) milestones or attain the standard by the Clean Air Act deadline of December 31, 1999 include a mandatory woodstove curtailment program and removal and destruction of uncertified woodstoves upon sale of home.

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The Lakeview SPZ would be part of the Lakeview PM₁₀ Control Strategy, and, if adopted, would become operational prior to the 1995-96 woodheating season (November 15, 1995). It would provide an extra measure of protection against PM₁₀ violations during the winter months when high smoke levels occur in Lakeview. As in other PM₁₀ nonattainment areas where woodburning curtailment programs are needed, the Lakeview SPZ would also prevent prescribed burning on "red" woodburning curtailment days, which has been shown to increase public compliance with such programs.

The two SPZs for the Eugene/Springfield and Grants Pass nonattainment areas are now considered unnecessary for several reasons: (1) only minor prescribed burning now takes place during the winter months around these areas; (2) wintertime PM₁₀ levels in these areas have been well below federal health standards for the last several years; (3) both communities are currently protected as "Designated Areas" under the Western Oregon Smoke Management Program, which basically restricts prescribed burning in the same manner as an SPZ (i.e., no burning allowed upwind if weather forecasts predict smoke impacts); and (4) that removal of these requirements will not jeopardize maintenance of the PM₁₀ standard in these areas.

How was the rule developed

The proposed Lakeview PM₁₀ Control Strategy is consistent with the 1990 federal Clean Air Act, and EPA guidance on Reasonably Available Control Measures (RACM) for PM₁₀ nonattainment areas. RACM measures proposed for the Lakeview are similar to those adopted and implemented in the other Oregon PM₁₀ nonattainment areas.

In 1993 the Town of Lakeview established a citizens air quality advisory committee to work with the Department on reviewing potential PM₁₀ control options. The Department has been working closely with the committee during the control plan development, and the Committee is moving forward with a resolution recommending Town adoption of a local ordinance containing necessary control measures such as voluntary woodsmoke curtailment, public education, and a mandatory curtailment contingency provision.

Special Protection Zones were established in 1992 for all current PM₁₀ nonattainment areas. All SPZs are identical, except that those in western Oregon are mandatory, while those in eastern Oregon are voluntary. Like the Klamath Falls and La Grande SPZs, the Lakeview provisions would be voluntary. Included in these SPZs are the following: (1) a prohibition on burning in the SPZ if weather conditions are likely to cause a smoke intrusion into the adjacent PM₁₀ nonattainment area; 2) monitoring of burns for at least 3 days and requirements to extinguish fires to prevent smoke from smoldering fires from

impacting the nonattainment area; and 3) a prohibition on new ignitions during "Red" woodburning curtailment days in adjacent nonattainment areas between Dec. 1 and Feb. 15th.

The Oregon Department of Forestry (ODF) is responsible for amending the Oregon Smoke Management Plan to adopt the Lakeview SPZ and delete the Eugene/Springfield and Grants Pass SPZs. The Department then submits these amendments to EPA as a revision to the Oregon SIP.

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

Implementation of the Lakeview PM₁₀ Control Strategy involves five primary measures which will have some affect on the public, industry, and local government of Lakeview, as well as and state and federal agencies. Lakeview residents with woodstoves and fireplaces, and those who conduct open burning will be the two groups most effected.

1. **Residential Woodheating Measures.** The principal means of achieving the needed reductions in Lakeview is through a voluntary woodburning curtailment and emission reduction program, an aggressive public education program, a noncertified woodstove replacement program, a ban on the installation of noncertified stoves, and restrictions on residential open burning. Under the voluntary curtailment program, woodburning households will be asked to curtail woodburning in stoves and fireplaces during air stagnation episodes. A minimum compliance target rate of 30% has been set for the voluntary program. Low income and sole source wood-heated homes are not expected to comply.

The typical cost to comply with woodburning curtailment is estimated at \$2-\$5 per curtailment day per woodburning home, depending upon the type of alternative heat, amount of weatherization, and size of home. According to the 1993 Lakeview Woodheating Survey, approximately (37%) of the Lakeview population use wood as their main source of heat. It is expected that homeowners will be asked not to burn their wood on 10 to 20 days during the winter heating season when the voluntary curtailment program is in effect. Based on these estimates, the total cost per household associated with the voluntary curtailment program is expected to range from \$20 to \$100 each year.

Some low and moderate income residents will benefit from a noncertified woodstove replacement assistance program administered by the Town of Lakeview and funded through a \$200,000 Community Development Block Grant. It is estimated that this program will benefit approximately (70-90) low and moderate income woodburning households within the nonattainment area.

For those households independently installing a new woodheating system, the ban on the sale and installation of used, noncertified woodstoves will eliminate the lower cost option of a used, noncertified woodstove.

Residential open burning in Lakeview will be managed through a permit system restricting open burning to good ventilation days. These restrictions will reduce the number of winter days on which homeowners may dispose of yard debris. Violators of open burning permit conditions will be subject to civil penalty.

The woodheating strategy is implemented through the Lakeview Air Quality Program ordinance and the Department's rules regulating woodstoves.

2. **Industrial Emission and Growth Measures.** Based on analysis of industrial impacts and the attainment needs of the community, the Department has concluded that both major industrial sources in Lakeview currently meet the intent of the Reasonably Available Control Technology (RACT) requirement, and that no additional emission controls are required at this time. One major facility has voluntarily agreed to relinquish emission credits through a revision to their Air Contaminant Discharge Permit, permanently reducing permitted emissions by 70%. While not needed for attainment purposes, additional Reasonably Available Control Measures (RACM) for industrial sources have been added in order to provide additional assurance of overall emission reduction in the community. RACM measures for controlling plant site fugitive dust, as well as requirements for enhanced operation and maintenance, and emission source testing, will provide an extra safety margin for emission reduction at a reasonable cost.

New or expanding industrial sources will be effected within the Lakeview PM_{10} nonattainment area through a revision of the Significant Emission Rate (SER). In order to assure that increases from industrial emissions within the nonattainment area do not jeopardize emission reductions gained from other PM_{10} control strategies, the Departments New Source Review rules (OAR 340-28-110, and 340-28-1930) are being revised, reducing the significant emission rate (trigger for new source review for new or major modified sources) from 15 to 5 tons per year. Any new or expanding source with an emission increase of greater than 5 tons/yr must fully offset the increase at a 1:1 ratio. This could be accomplished by reducing other on-site emissions sources, or by reducing off-site emissions such as through the replacement of noncertified woodstoves.

New or expanding industry with emission increases of 15 tons/yr or greater will be required to install Lowest Achievable Emission Rate (LAER) pollution control equipment to mitigate those increase.

3. **Road Sanding-Dust Measures.** The Oregon Department of Transportation will coordinate with Lakeview local officials to reduce emissions from winter road sanding through the use of cleaner materials and increased rapid cleanup. All road sanding emission reduction measures will be consistent with public safety.

4. **Prescribed Forestry Burning Measures.** In order to protect the Lakeview PM₁₀ Nonattainment Area from prescribed burning smoke impacts, a Lakeview SPZ will be established. Operation of this SPZ will be the responsibility of ODF, and between November 15 and February 15 will require daily weather forecasting, issuing burning instructions, and tracking burning activity for prescribed burning within a 20 mile area of the Fremont National Forest around Lakeview. The SPZ will affect private land owners who wish to conduct prescribed burning during the winter control period. However, over the last 7 years, ODF estimates that only 3-4 percent of the average annual burning in the Fremont National Forest occurs in the SPZ during this time period.

Eliminating the two SPZs for the Eugene/Springfield and Grants Pass nonattainment areas would allow ODF to save the cost associated with operating these SPZs, starting in November 1995.

5. **Contingency or Backup Measures.** The Clean Air Act Amendments of 1990 requires states to include contingency measures in the PM₁₀ control strategy that can be automatically implemented in the event that the base attainment strategy fails to demonstrate Reasonable Further Progress (RFP) toward attainment, or attainment of the NAAQS by the Clean Air Act deadline. The Reasonable Further Progress (RFP) milestone of December 31, 1998 will require an evaluation of the success achieved in implementing the primary PM₁₀ control strategy and in reducing emissions. If the Department, in consultation with the Town of Lakeview and the EPA, determine that RFP has not been demonstrated, contingency measures would be implemented.

The Lakeview PM₁₀ Control Strategy includes the following contingency measures which will effect the same groups as described above:

1. The Lakeview Clean Air Ordinance provides for the implementation of a mandatory curtailment program should the area fail to show Reasonable Further Progress by December 1998, or attain the standard by the 1999 deadline. A mandatory curtailment program would include enforcement of curtailment requirements, including possible civil penalties. Generally, low income and sole source woodburning homes are exempt from curtailment requirements.

2. The state has authority to require, as a PM₁₀ contingency measure, the removal of noncertified woodstoves in a PM₁₀ nonattainment area upon sale of a home. If implemented, homeowners would lose any resale value assigned to the used stove; typically in a range of \$50 to \$300.

3. As a contingency, the voluntary SPZ forestry slash burning program would be upgraded to a mandatory program requiring more stringent management of prescribed burning around Lakeview.

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

The Clean Air Act as amended in 1990 requires PM₁₀ control strategies to be developed and submitted for EPA approval by a certain date. The Clean Air Act submittal deadline for the Lakeview PM₁₀ Control Plan is April 25, 1995. The Attainment date is December 31, 1999. The proposed control strategy is consistent with federal PM₁₀ nonattainment area requirements. Adjacent states have adopted similar control measures for PM₁₀ nonattainment areas.

How will the rule be implemented

The Town of Lakeview has hired an Air Quality Program Coordinator to implement the required local PM₁₀ control measures. Regional Oregon Department of Transportation staff will work to reduce excess emissions from winter road sanding operations. The DEQ Eastern Region staff will provide on-site technical assistance to the Town of Lakeview and the local Program Coordinator.

ODF will be responsible for operation of the Lakeview SPZ, which will go into effect on November 15, 1995.

Are there time constraints

The Clean Air Act as amended in 1990 requires PM₁₀ Control Plans to be developed and submitted for approval EPA by date certain. The Clean Air Act deadline for the Lakeview PM₁₀ Control Plan is April 25, 1995. The Attainment date is December 31, 1999.

Memo To: Interested and Affected Public
January 3, 1995
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Contact for more information

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

David L. Collier
Air Quality Division
Oregon Department of Environmental Quality
811 SW Sixth Ave.
Portland, OR 97204-1390
(503) 229-5177
Toll Free 1-800-452-4011

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State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for

1. PM₁₀ Control Strategy for the Lakeview PM₁₀ Nonattainment Area.
2. Special Protection Zone (SPZ) Revision to the Oregon Department of Forestry (ODF) Smoke Management Plan.
3. Minor housekeeping and conforming amendments.

Rulemaking Statements

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

1. Legal Authority

ORS 468A.035, General Comprehensive Plan

2. Need for the Rule

Ambient air quality in the Town of Lakeview, Oregon (population 4,600) has repeatedly violated the 24-hour national ambient air quality health standard for respirable particulate (PM₁₀). As a result, Lakeview has been designated by the Environmental Protection Agency as a moderate PM₁₀ Nonattainment Area. This requires the state to develop an emission control strategy which will reduce PM₁₀ emissions and demonstrate compliance with standards by dates specified in the Clean Air Act.

This proposal contains amendments to the Oregon Smoke Management Plan, made by the Oregon Department of Forestry, establishing a forestry slash burning Special Protection Zone (SPZ) for Lakeview. The Smoke Management Plan was also amended to eliminate the existing Special Protection Zones for the Eugene-Springfield and Grants Pass PM₁₀ Nonattainment Areas. These SPZ's are believed to be no longer necessary given that little prescribed burning takes place during the winter heating season, and that wintertime PM₁₀ levels have been well below the standard for many years. This proposal also includes housekeeping and conforming rule amendments.

This proposal includes one unrelated housekeeping amendment to Division 21 to clarify the intent of the rule.

3. Principal Documents Relied Upon in this Rulemaking

The Clean Air Act Amendments of 1990, Title I. 42 U.S.C. 7401 et seq., as amended. November 15, 1990.

PM10 SIP Development Guideline, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, research triangle Park NC, June 1987; EPA-450/2-86-001.

Guidance Document for Residential Wood Combustion Emission Control Measures, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, research Triangle Park, NC September 1989, EPA-450/2-89-015

4. Advisory Committee Involvement

In 1993 the Town of Lakeview established a citizens air quality advisory committee to work with the Department on reviewing potential PM₁₀ control options. The Department has been working closely with the committee during the control plan development, and the Committee is moving forward with a resolution recommending Town adoption of a local ordinance containing necessary control measures such as voluntary woodsmoke curtailment, public education, and a mandatory curtailment contingency provision. The proposed measures are consistent with EPA guidance on Reasonably Available Control Measures for PM₁₀.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for

1. PM₁₀ Control Strategy for the Lakeview PM₁₀ Nonattainment Area.
2. Adopting Special Protection Zone (SPZ) Amendments to the Oregon Department of Forestry Smoke Management Plan.
3. Minor housekeeping and conforming amendments.

Fiscal and Economic Impact Statement

Introduction

Ambient air quality in the Town of Lakeview, Oregon (population 4,600) has repeatedly violated the 24-hour national ambient air quality health standard for respirable particulate (PM₁₀). As a result, Lakeview has been designated by the Environmental Protection Agency as a moderate PM₁₀ Nonattainment Area. This requires the state to develop an emission control strategy which will reduce PM₁₀ emissions and demonstrate compliance with standards by dates specified in the Clean Air Act. The principal means of achieving the necessary air quality improvements is through PM₁₀ emission reduction from woodstoves/fireplaces, residential open burning and road dust. Additional reductions are expected from the phase in of certified stoves, and the existing building code prohibition on the installation on noncertified used woodstoves.

The implementation of the PM₁₀ control strategies involve residents, local governments, and state and federal agencies. The group most affected by the proposed control strategies are residents with woodstove or fireplaces. If the contingency measures (mandatory woodstove curtailment program; removal and destruction of uncertified woodstoves upon sale of home) are implemented, residents will be further affected. No adverse fiscal impact on small business (less than 50 employees) is anticipated. Heating system dealerships may benefit from several emission control measures.

This proposal contains amendments to the Oregon Smoke Management Plan, made by the Oregon Department of Forestry, establishing a forestry prescribed burning Special Protection Zone (SPZ) for Lakeview. The Smoke Management Plan will also be amended to eliminate the existing Special Protection Zones for the Eugene-Springfield and Grants Pass PM₁₀ Nonattainment Areas. These SPZ's are believed to be no longer necessary given that little prescribed burning takes place during the winter heating season, and that wintertime PM₁₀ levels have been well below the standard for many years.

This proposal includes related housekeeping and conforming rule amendments, and one unrelated housekeeping amendment to Division 21 in order to clarify the intent of the rule. None of these are anticipated to have any fiscal impact.

General Public

Cost to Residents With Woodstove and Fireplaces:

Woodstove and Fireplace emissions will be reduced by a public education program addressing PM₁₀ health issues and woodstove operation techniques, voluntary woodsmoke curtailment program, and a ban on the installation of noncertified used woodstoves. The typical cost of woodburning curtailment is estimated at \$2-\$5 per curtailment day per woodburning home, depending upon the type of alternative heat, amount of weatherization, and size of home. According to the 1992/93 Lakeview Woodheating Survey, approximately (37%) of the population within the Lakeview Urban Growth Boundary (684 occupied housing units) use wood as their main source of heat. It is expected that homeowners will be asked not to burn their wood on 10 to 20 days during the winter heating season when the voluntary curtailment program is in effect. Based on these estimates, the total cost per household associated with the voluntary curtailment program is expected to range from \$20 to \$100 each year.

Low income residents may benefit through a noncertified woodstove replacement assistance program administered by the Town of Lakeview and funded through a \$200,000 Community Development Block Grant. It is estimated that this program will benefit approximately (70-90) low and moderate income woodburning households within the nonattainment area.

Contingency Plan Costs To Woodburning Homes:

Mandatory Woodburning Curtailment: If implemented, the mandatory curtailment contingency measures will require increased compliance from a larger segment of the woodburning population. This increased compliance may ultimately be enforced through civil penalty. The amount of any Lakeview specific penalty has not yet been determined, but typically ranges from \$20 to \$200 or more in other PM₁₀ nonattainment areas. The specifics of enforcement actions, including the amount of civil penalties, is customarily at the discretion of the local government.

Mandatory Removal of Noncertified Woodstove Upon Home Sale: The potential loss in home value resulting from the removal of a used noncertified woodstove as part of a home sale is highly variable. It is expected that any value assigned to a noncertified stove will be negotiated between the home seller and home purchaser. Used woodstove values typically range from \$50 to \$300.

Fire Safety:

Many older noncertified woodstoves have been installed without permit or safety inspection. It is anticipated that as older noncertified stoves are replaced, the fire safety in some homes will be greatly improved, resulting in less risk of costly damage and injury due to home fire.

Public Health:

As air quality levels improve, general respiratory health is expected to improve, potentially resulting in lower medical costs, especially for those with respiratory conditions such as asthma, or cardiovascular disease.

Small Business

It is anticipated that some small business will benefit as older noncertified woodstoves are replaced with new heating systems.

The Lakeview SPZ may have some impact on small business such as small forest contractors who are hired to conduct prescribed burning, tree planting, and other work. While the number of potential contractors in Lakeview is unknown, it is likely that this number would be low. For this reason the fiscal impact on small businesses is unknown, but estimated to be minor.

Large Business

Two large lumber mills in Lakeview provide significant local employment. Both facilities currently employ Reasonably Available Control Technology (RACT) emission control. Revisions to OAR 340 Division 30 will contain specific fugitive dust control and operation and maintenance plan requirements for large sawmills in Lakeview. These requirements expand on current requirements contained in each facilities Air Contaminant Discharge Permit, and should not result in any significant additional expenditure.

To ensure that future industrial growth does not jeopardize attainment, selected sections of Division 28 are being amended to revise the Significant Emission Rate (SER) trigger for new source review. The SER will be lowered from 15 tons/yr to 5 tons/yr. This approach, similar to that employed in the Klamath Falls PM₁₀ Nonattainment Area, would require new or modified 5 ton/yr sources to fully offset increased emissions. It is anticipated that the cost of emission offsets would fall within the normal range for Reasonably Available Control Measures of \$1,000 to \$3,000 per ton PM₁₀.

No fiscal impact on large businesses is anticipated as a result of the Lakeview SPZ.

Forest Land Owners

Forest land owners will be required by the Lakeview SPZ to monitor and, where needed, extinguish smoldering piles. SPZ restrictions will require rescheduling some prescribed burning to periods with more favorable smoke dispersion conditions.

The additional cost to forest land owners is estimated at \$3,640 per year to reschedule burning, for additional monitoring and for fire mop-up costs. This estimate is based on the following assumptions: (1) 40 acres are burned before or after the SPZ restrictions are in effect, adding an extra cost of \$15 per acre, and (2) that 40 acres are not burned but is treated by alternative methods resulting in an additional cost of \$76 per acre.

If the contingency measures were to be implemented, the additional cost to forest land owners is estimated at \$8,400 annually. This estimate assumes that 40 acres are burned before or after the SPZ restrictions are in effect, adding an extra cost of \$20 per acre, and (2) that 100 acres are not burned but are treated by alternative methods resulting in an additional cost of \$76 per acre.

Local Governments

The attainment plan includes a commitment from the Town of Lakeview to operate the Air Quality program at a cost of approximately \$10,000 to \$15,000 per year as resources allow. Historically, funding has been provided through the Department of Environmental Quality with the use of state and federal grant funds. It is anticipated that this funding level will continue. The Town of Lakeview has provided, and may continue to provide, some matching funds toward the attainment effort.

The Lakeview SPZ is not anticipated to have any fiscal impact on local governments.

State Agencies

The Town of Lakeview has hired an Air Quality Program Coordinator to implement the required local PM₁₀ control measures. Regional Oregon Department of Transportation staff will work in coordination with the program coordinator and local public works staff to reduce excess emissions from winter road sanding operations. The DEQ Eastern Region staff will provide on-site technical assistance to the Town of Lakeview and the local program coordinator. The DEQ will provide technical assistance through existing staff and within existing resources.

Implementation of the Lakeview SPZ will restrict the burning on approximately 1000 acres, at an estimated cost of \$2,000 per year to the Oregon Department of Forestry. Additional costs if the SPZ contingency plan were to be implemented are estimated at \$5,000 per year. However, comparable cost savings are expected as a result of eliminating the SPZs for the Eugene-Springfield and Grants Pass PM₁₀ Nonattainment Areas are anticipated to roughly

offset the costs associated with the Lakeview SPZ. As a result, the Oregon Department of Forestry is expect to manage the Lakeview SPZ with existing staff and within existing resources.

Assumptions

See those assumptions stated above.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for

1. PM₁₀ Control Strategy for the Lakeview PM₁₀ Nonattainment Area.
2. Special Protection Zone (SPZ) Revision to the Oregon Department of Forestry (ODF) Smoke Management Plan.
3. Minor housekeeping and conforming amendments.

Land Use Evaluation Statement

1. Explain the purpose of the proposed rules.

Ambient air quality in the Town of Lakeview, Oregon (population 4,600) has repeatedly violated the 24-hour national ambient air quality health standard for respirable particulate (PM₁₀). As a result, Lakeview has been designated by the Environmental Protection Agency as a moderate PM₁₀ Nonattainment Area. This requires the state to develop an emission control strategy which will reduce PM₁₀ emissions and demonstrate compliance with standards by dates specified in the Clean Air Act. The Lakeview Attainment Plan contains specific Reasonably Available Control Measures (RACM) designed to reduce PM₁₀ emissions from significant emission source categories within the nonattainment area boundary. The control strategy has been designed to assure attainment with the national ambient air quality health standard for PM₁₀ (24-hour average), and meet the requirements of the Clean Air Act.

This proposal requires amendments to the Oregon Smoke Management Plan, creating a forestry slash burning Special Protection Zone (SPZ) for Lakeview. The Smoke Management Plan will also be amended to eliminate the existing Special Protection Zones for the Eugene-Springfield and Grants Pass PM₁₀ Nonattainment Areas. These SPZ's are believed to be no longer necessary given that little prescribed burning takes place during the winter heating season, and that wintertime PM₁₀ levels have been well below the standard for many years. Removal of these requirements will not jeopardize attainment in these areas. This proposal also includes housekeeping and conforming rule amendments.

This proposal includes one unrelated housekeeping amendment to Division 21 to clarify the intent of the rule.

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

Yes No

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

The control strategy includes concurrently proposed revisions to industrial PM₁₀ emission rules in Lakeview including related house-keeping and conforming measures which affect a land use program identified as "Issuance of Air Contaminant Discharge Permits (ACDP)".

Other proposed PM₁₀ control measures for residential woodsmoke, soil dust, and prescribed burning under the Oregon Smoke Management Plan, do not affect programs or activities that are considered land use programs.

No other concurrently proposed new provisions of the control strategy are:

- 1) Specifically referenced in the statewide planning goals; or
- 2) Reasonably expected to have significant effects on:
 - (a) resources, objectives or areas identified in the statewide planning goals, or
 - (b) present or future land uses identified in acknowledged comprehensive plans.

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

Yes No : Local government approval is required before ACDP approval is granted.

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

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

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

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

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

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

The proposed rules are not considered programs affecting land use.

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

Not Applicable

Air Qual. Division
Division

Debra Go
Intergovernmental Coord.

12/19/94
Date

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

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

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

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

Yes, federal requirements do apply. For all areas designated by the Environmental Protection Agency as nonattainment for PM₁₀, the Clean Air Act Amendments of 1990 require that states develop an emission control strategy which will reduce PM₁₀ emissions and demonstrate compliance with National Ambient Air Quality Standards (NAAQS) by the applicable Clean Air Act deadline.

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

The applicable federal requirements are both performance and technology based. Federal guidance suggests specific technical requirements for air quality analysis and emission control strategies. However the most stringent (governing) requirement is performance based. The Clean Air Act requires a nonattainment area to comply with air quality standards by a specific deadline. If attainment can not be demonstrated, increasingly restrictive control measures are required.

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

The requirements of the Clean Air Act are specifically applicable to Oregon. Oregon has demonstrated some of the highest PM₁₀ levels in the country, placing Oregonians at risk. The Clean Air Act requirements and process for PM₁₀ standards compliance is appropriate and applicable to emission sources in Oregon, and will provide direct benefit to Oregon citizens.

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

The proposed requirements will provide clear direction for regulated industry and the public to comply in a cost effective way.

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

Federal requirements state that control measures should be implemented and attainment achieved as expeditiously as practicable. The proposed requirements are consistent with this goal.

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

The Lakeview Attainment Plan does contain a reasonable margin for future growth.

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

The proposed control requirements focus most heavily on those emission source categories which most significantly contribute to the nonattainment problem.

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

No

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

No

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

Yes

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

The proposed requirements will both mitigate existing pollution problems and contribute to pollution prevention.

State of Oregon
Department of Environmental Quality

Memorandum

Date: March 3, 1995

To: Environmental Quality Commission
From: David L. Collier.
Subject: Presiding Officer's Report for Rulemaking Hearing
Hearing Date and Time: February 16, 1995 beginning at 7:00 pm
Hearing Location: Lakeview Town Hall, Lakeview, Oregon

Title of Proposal:

1. PM₁₀ Control Strategy for the Lakeview PM₁₀ Nonattainment Area.
2. Revisions to the Oregon Department of Forestry (ODF) Smoke Management Plan.
3. Related housekeeping and conforming rule amendment, with one unrelated housekeeping rule amendment to Division 21.

The rulemaking hearing on the above titled proposal was convened at 8:13 pm. People were asked to sign witness registration forms if they wished to present testimony. People were also advised that the hearing was being recorded and of the procedures to be followed.

10 people were in attendance, 1 person signed up to give testimony.

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

People were then invited to testify and called in the order of receipt of witness registration forms and presented testimony as noted below. One person presented testimony. Three other commentors provided written testimony prior to the close of the public record on February 22, 1995 at 5:00 pm.

Summary of Oral Testimony

Mr. Paul Harlan: Vice President and General Manager of Fremont Saw Mill, Lakeview

Mr. Harlin wished to state that he recognized that Lakeview did have an air quality problem. He feels that the exceedences of the 24-hour standard are due to temperature

Memo To: Environmental Quality Commission
Presiding Officer's Report on
March 3, 1995 Rulemaking Hearing
Page 2

inversions and residential woodheating emissions. He feels that significant gains have already been made toward clean air due to public education regarding woodsmoke and the noncertified stove replacement program. Fremont Saw Mill owns and manages approximately 12,000 acres in the area which would be effected by the voluntary Special Protection Zone (SPZ) for prescribed burning. He would like to go on record as having limited support for the SPZ. He has concerns about the economic impacts to Fremont Saw Mill of limiting forest slash burning. He would like the regulatory agencies to recognize that forest residue burning and forest management practices are not a significant contributor to exceedence episodes and nonattainment in Lakeview. Most of Fremont's forest residue burning is conducted as the opportunity presents itself and when conditions warrant. Mr. Harlan is concerned that the Lakeview SPZ would reduce their flexibility to manage forest wastes. Mr. Harlin feels the SPZ boundary is unnecessarily large. Fremont generally supports the overall air quality effort including the SPZ concept, with the recognition that Fremont's forest burning is not a significant contributor to nonattainment, and that their voluntary participation is requested for reasons of equity and community support. Mr. Harlin has concerns that the plan could have a negative impact on future growth. Mr. Harlin is concerned that the plan will require additional control strategies for dust emissions from the Fremont Saw Mill facility. Mr. Harlan supports the overall plan to reduce PM10 emissions in Lakeview.

Written testimony was not submitted with the record. There was no further testimony and the hearing was closed at 8:35 pm.

Attachments:

None

ATTACHMENT D

INDEX OF COMMENTS RECEIVED

1. Douglas Jones
JBR Environmental Consultants: On Behalf of
Atlas Perlite, Inc. Denver, Colorado
2. U.S. Environmental Protection Agency
Regional 10, Air Programs Development Section
Seattle, Washington
3. Dr. Rober Palzer
Oregon Chapter Sierra Club
4. Mr. Paul Harlin
Vice President and General Manager
Fremont Saw Mill, Lakeview, Oregon

ATTACHMENT D
SUMMARY OF COMMENTS RECEIVED AND THE DEPARTMENT'S RESPONSE

1. Comments

The Lakeview Control Plan includes a revision to Oregon Administrative Rule OAR 340-28-110, which would lower the significant emission rate from 15 tons/yr to 5 tons/yr and require emission offsets and LAER controls for new sources or major modification of existing sources exceeding the significant emission rate. Atlas Perlite, Inc. has submitted an Air Contaminant Discharge Permit application for operations in Lakeview. Atlas believes the proposed rule would more appropriately apply to sources submitting applications for permits on or after the effective date of the rule. The requirements of the rule should not apply to sources which have already submitted a complete permit application prior to the effective date of the new rule.

Response

Because this facility was not in existence during the 1978 new source review baseline period, baseline emissions (tons/yr) for this 8 ton/yr source are zero. If the permit application was processed under the requirements of the proposed 5 ton/yr SER, this source would be above the 5 ton/yr limit, and therefore subject to the emission offset requirements of New Source Review. The Department agrees that it would be unreasonable to require emission offsets under the proposed 5 ton/yr SER when a complete permit application has been accepted by the Department under the existing 15 ton/yr SER rule. It was not the intention of the Department to require emission offsets at the initial operation phase of this facility. However, any future increases above the 5 ton/yr SER will be subject to New Source Review requirements. The appropriate rule language of Division 28 has been clarified to specify the effective date of the 5 ton/yr Significant Emission Rate as May 1, 1995.

2. Comments

The Environmental Protection Agency (EPA) concurs with the Departments request to use proportional modeling as the basis of the attainment demonstration for the 24-hour PM₁₀ standard, and concurs to omit an attainment demonstration for the annual NAAQS. The EPA supports the location of the maximum air monitoring site and frequency of sampling.

EPA commented about their concern for the design day calculation, suggesting that a design day value of 200 ug/m³ would be more appropriate and the 217 ug/m³ value suggested by the Department. EPA suggests that the expected number of exceedences should be 3.5 per year instead of 2.8 per year as reported by the Department. EPA

believes that a background concentration of 8.3 ug/m³ would be more appropriate than the 7.5 ug/m³ value proposed by the Department. EPA supports the Department's use of receptor and dispersion modeling to determine source apportionment.

Response

The Department has reviewed the design value calculations and believes that a design value of 217 ug/m³ is technically justifiable and appropriate for the Lakeview attainment demonstration. Statistical analysis of actual air monitoring data suggests possible design values ranging from 196 ug/m³ to 201 ug/m³, making the proposed 217 ug/m³ value an appropriately conservative estimate. The expected number of exceedences as reported by the Department was based on air monitoring data available at the time. Since then, additional air monitoring data has become available and the expected number of exceedences as of 1994 has been revised. The Department concurs with EPA that an exceedence day background value of 8.3 ug/m³ would be appropriate, and the attainment demonstration has been revised accordingly.

3. Comments

Sierra Club supports the proposed woodstove control measures, revision of the significant emission rate, and the Lakeview Special Protection Zone (SPZ). The Special Protection Zones (SPZ) for Eugene-Springfield and Grants Pass should not be eliminated. Although slash burning has been decreasing around these areas, the amount still being burned during the winter months is of great concern.

Response

Prior to the start of SPZ protection for both of these areas, prescribed burning impacts in both PM₁₀ Nonattainment Areas were very rare and the PM₁₀ contribution less than 1 percent to nonattainment. Despite this SPZs were adopted in 1991 for all state PM₁₀ Nonattainment Areas as additional measures to ensure attainment by the December 31, 1994 deadline. Not only have both areas have met this deadline, but neither area has had a PM₁₀ exceedance since 1987. Winter prescribed burning within these two SPZs has followed the overall decline in western Oregon prescribed burning over the last 10 years, or about a 50-60% drop. Records of prescribed burning complaints over this time period also show a significant decline.

Elimination of the SPZs for these areas will not leave them unprotected. Under the mandatory Western Oregon Smoke Management Program, both areas will be protected as "designated areas", which prohibits any burning upwind if weather forecasts predict smoke impacts. The Department has observed that other western Oregon communities identified as designated areas have had few impacts and are well protected under this program.

For these reasons the Department believes the SPZs for Eugene-Springfield and Grants Pass are no longer needed.

Comment

The SPZ for Lakeview should be mandatory instead of voluntary given the level of prescribed burning in Lake County around this community.

Response

Whether mandatory or voluntary, SPZ protection only addresses prescribed burning within a 20 mile radius of the PM10 nonattainment area. Burning in Lake County is significant, however prescribed burning impacts in Lakeview are very rare and not a significant contributor to nonattainment. According to Oregon Department of Forestry records, the amount of prescribed burning within the SPZ compared to the county has been between 1%-6% since 1992. During some winter months there is no prescribed burning within the SPZ. Given these reasons the Department does not believe a mandatory SPZ is warranted.

Comment

Sierra Club is concerned about the ability of industrial facilities in Lakeview to increase emissions to permitted levels at some time in the future. They commented that permitted emissions should have been accounted for in the 1992 emission inventory and used in the dispersion modeling.

The Sierra Club suspects that the impact from industrial emissions during exceedence days are higher than was estimated by Chemical Mass Balance receptor modeling. Because of this uncertainty, Sierra Club believes that the control plan contingency measures should focus more on industrial emissions. Sierra Club also believes that Continuous Emission Monitoring (CEM) should be required for industrial boilers at Fremont Saw Mill and Lakeview Lumber.

Response

The attainment demonstration is used to show the effect of emission control strategies on projected uncontrolled emissions, and to demonstrate that the air quality standard will be met. This demonstration must account for all industrial emissions at their maximum permitted levels. While both actual and allowable industrial emissions were reported in the control plan, maximum permitted industrial emissions were used in the attainment demonstration.

Dispersion modeling was conducted for the sole purpose of corroborating the impact of industrial emissions as estimated by Chemical Mass Balance receptor modeling. Maximum permitted industrial emissions were accounted separately in the attainment demonstration.

Both receptor and dispersion modeling have verified that exceedence day impacts from industrial emissions are not significant. Therefore, no additional emission controls are warranted at this time. The Significant Emission Rate for industrial emissions has been lowered from 15 tons/yr to 5 tons/yr. Any new or major modification above 5 tons/yr will be required to offset emissions or install LAER level emission control.

4. Comments

Fremont Saw Mill recognized that Lakeview did have an air quality problem. Mr. Harlin feels that the exceedences of the 24-hour standard are due to temperature inversions and residential woodheating emissions. Fremont Saw Mill owns and manages approximately 12,000 acres in the area which would be effected by the voluntary Special Protection Zone (SPZ) for prescribed burning. He would like to go on record as having limited support for the SPZ. He has concerns about the economic impacts to Fremont Saw Mill of limiting forest slash burning. He would like the regulatory agencies to recognize that forest residue burning and forest management practices are not a significant contributor to exceedence episodes and nonattainment in Lakeview. Fremont is concerned that the Lakeview SPZ would reduce their flexibility to manage forest wastes. Fremont generally supports the overall air quality effort including the SPZ concept, provided that regulatory agencies recognize that Fremont's forest burning is not a significant contributor to nonattainment, and that their voluntary participation is requested for reasons of equity and community support. Mr. Harlin has concerns that the plan could have a negative impact on future growth. Fremont is concerned that the plan will require additional control strategies for dust emissions from the Fremont Saw Mill facility. Fremont supports the overall plan to reduce PM10 emissions in Lakeview.

Response

Air quality impacts from prescribed forest burning have not been identified as a significant contributor to air quality exceedences and nonattainment. The Department is grateful to both public and private land owners for their participation in this prevention program. The proposed lowering of the Significant Emission Rate would effect any major modifications larger than 5 tons/yr. Fugitive dust control measures proposed in the control plan are consistent with existing dust control requirements contained in Fremont Saw Mill's current Air Contaminant Discharge Permit.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for

1. PM₁₀ Control Strategy for the Lakeview PM₁₀ Nonattainment Area.
2. SPZ Revision to the Oregon Department of Forestry (ODF) Smoke Management Plan.

Rule Implementation Plan

Summary of the Proposed Rule

Ambient air quality in the Town of Lakeview, Oregon (population 4,600) has repeatedly violated the 24-hour national ambient air quality health standard for respirable particulate (PM₁₀). As a result, Lakeview has been designated by the Environmental Protection Agency as a moderate PM₁₀ Nonattainment Area. This requires the state to develop an emission control strategy which will reduce PM₁₀ emissions and demonstrate compliance with standards by dates specified in the Clean Air Act. The Lakeview PM₁₀ Control Strategy contains technical analysis and emission reduction measures necessary to demonstrate compliance with the National Ambient Air Quality Standard for PM₁₀ (24-hour average) by the Clean Air Act deadline of December 31, 1999. The attainment plan will affect residential woodburning and residential open burning within the Lakeview Urban Growth Boundary (UGB), as well as significant industrial sources within the Lakeview UGB, and the Oregon Department of Transportation.

Included in this control strategy is the establishment of a Special Protection Zone (SPZ) around the Town of Lakeview which would provide necessary protection from forest slash burning impacts during the winter heating season. In amending the ODF Smoke Management Plan to add a Lakeview SPZ, the Department is proposing to remove current SPZ's for the Grants Pass and Eugene-Springfield nonattainment areas. These measures are believed to be no longer necessary given that these areas have successfully demonstrated attainment with the PM₁₀ standard. Removal of these requirements will not jeopardize the continued maintenance of attainment.

Proposed Effective Date of the Rule

The Clean Air Act as amended in 1990 requires PM₁₀ Control Plans to be developed and submitted for EPA approval by date certain. The Clean Air Act submittal deadline for the Lakeview PM₁₀ Control Plan is April 25, 1995. The plan is scheduled for adoption by the Environmental Quality Commission at their regularly scheduled April 14, 1995 meeting.

Proposal for Notification of Affected Persons

- Mail to Mailing Lists 1/10/95
- Notice to Secretary of State 1/13/95
- Public Hearing: In Lakeview 2/16/95
- Closure of Record 2/22/95

Proposed Implementing Actions

The Town of Lakeview has hired an Air Quality Program Coordinator to implement the required local PM₁₀ control measures. Regional Oregon Department of Transportation staff will work to reduce excess emissions from winter road sanding operations. The Department of Environmental Quality (DEQ) will coordinate with the Oregon Department of Forestry (ODF) concerning amendments to the Smoke Management Plan.

Proposed Training/Assistance Actions

DEQ Headquarters and Eastern Region staff will provide on-site technical assistance to the Town of Lakeview and the local Program Coordinator.

ATTACHMENT F

Local Air Quality Ordinances

Town of Lakeview Air Quality Resolution
Lakeview Air Quality Improvement Plan
Prohibition On Use Of Solid Fuel Burning Devices
Prohibition On The Burning Of Wastes

THE COUNCIL OF THE TOWN OF LAKEVIEW

ESTABLISHMENT OF A)
LAKEVIEW AIR QUALITY)
IMPROVEMENT PROGRAM)

RESOLUTION NO. 402

WHEREAS, the Town of Lakeview recognizes the importance of maintaining healthful air quality; and

WHEREAS, the economic growth of the Town of Lakeview requires clean air; and

WHEREAS, the federal Clean Air Act and amendments thereto mandate that air quality in all communities must attain and maintain the National Ambient Air Quality Standard to protect public health; and

WHEREAS, air quality within the Lakeview area has been determined to be in noncompliance with the National Ambient Air Quality Standard for particulate matter (PM10); and

WHEREAS, the establishment of an air quality improvement program is necessary to accomplish the foregoing goals;

IT IS HEREBY RESOLVED by the Town Council of the Town of Lakeview, Oregon that a Lakeview air quality improvement program be established to restore and maintain healthful air quality within the Town of Lakeview. Said program shall be a cooperative effort with Lake County, the Town of Lakeview, the Department of Environmental Quality and other involved parties.

IT IS FURTHER RESOLVED by the Council of the Town of Lakeview that such air quality plan shall be drafted and formulated by the Town's Air Quality Committee for the ultimate purpose of obtaining an approximate 25% reduction in pollutant emissions in order to reach the attainment standard imposed by the federal Clean

Air Act. The air quality improvement program shall implement, but is not necessarily limited to, the following procedures and programs:

(a) The establishment of a voluntary curtailment program which would achieve a compliance rate of approximately 30% to 35% for the purpose of reducing wood smoke emissions. Such voluntary program shall include a public information program, the establishment of a daily curtailment advisory call, and neighborhood drive through surveys.

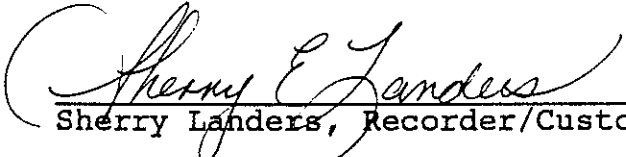
(b) The operation of a woodstove replacement program for the purpose of replacing approximately 80 non-certified woodstoves in low income homes within the Town of Lakeview.

(c) The making of recommendations regarding the enactment of an ordinance prohibiting the burning of waste and establishing restrictions on open burning.

(d) The making of recommendations regarding the establishment of an ordinance prohibiting the use of solid fuel burning and establishing a mandatory program in the event the voluntary program does not achieve the required participation rate.

(e) Any other programs or policies, if approved by the Town Council, that would aid in improving air quality within the Town of Lakeview.

PASSED AND DATED this 28th day of February, 1994.


Sherry Landers, Recorder/Custodian

ATTACHMENT

LAKEVIEW AIR QUALITY IMPROVEMENT PROGRAM

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Lakeview Air Quality Improvement Program

I. STATEMENT OF THE PROBLEM

On May 13, 1992, the Town of Lakeview was notified by the State of Oregon's Department of Environmental Quality that the Town had exceeded the National Ambient Air Quality Standard (NAAQS) for particulate matter. Air sampling conducted since October 1991 determined that PM10 particulate matter concentrations exceeded the 24-hour NAAQS, and that a State Implementation Plan (SIP) describing and implementing control strategies to restore healthful air quality would be needed. For Lakeview, the Clean Air Act Amendments of 1990 require that such an "attainment plan" be adopted by the State of Oregon prior to April 25, 1995. If the State of Oregon and the Town of Lakeview fail to develop and implement such a plan, the US Environmental Protection Agency has the authority to impose a Federal Implementation Plan.

The boundaries of the airshed, which has been classified as PM10 non-attainment, is the area within Lakeview's urban growth boundary.

In response to the need to develop a framework for a PM10 attainment plan, the Town of Lakeview established a citizens Air Quality Advisory Committee. The basic premise under which the committee operates is that good quality air is a valuable resource, is important to public health, and is important to the economic well being of the community.

II. AIR QUALITY PROGRAM ESTABLISHED

It is the Town of Lakeview's goal to attain, as soon as possible, the National Ambient Air Quality Standards for particulate matter (PM10) and to maintain healthful air quality in the future. To assure that this goal is met, the Town of Lakeview hereby establishes an Air Quality Program to be implemented by the community. All elements of the Air Quality Program will be implemented by a coordinator working in cooperation with the Town Attorney, the Town Council, public advisory committees and other governmental agencies.

The Town of Lakeview's program shall be developed and implemented in cooperation with Lake County for that area lying inside the Town's urban growth boundary, but outside the Town Limits.

III. COMMITMENT OF TOWN, STATE AND FEDERAL RESOURCES

In establishing the Air Quality Program, the Town of Lakeview hereby commits support to the Program, both in terms of staff time and material resources. The level of funding support is contingent upon available revenues and program needs. These resources will be

Lakeview Air Quality Improvement Program

supplemented by air quality and meteorological monitoring services as well as program support grants provided by the Environmental Protection Agency (EPA) and other funding sources. The Department of Environmental Quality (DEQ) and the Town of Lakeview estimate that the combined total effort of staff time and programs will cost approximately \$10,000-\$15,000 per year.

IV. ADVISORY COMMITTEE ESTABLISHED

The Town Council hereby establishes a standing Air Quality Advisory Committee. The Advisory Committee is charged with the responsibility of providing recommendations to the Council regarding air quality management within the Town of Lakeview. Committee members shall be appointed by the Town Council.

V. ELEMENTS OF THE AIR QUALITY PROGRAM

Elements of the Town of Lakeview's Air Quality Program are described below. The program is directed toward attainment of the National Ambient Air Quality Standards for particulate matter. Phase I relies on a voluntary wood smoke curtailment effort as a initial control strategy. The second phase focuses on additional mandatory steps that will be taken should further analysis by the DEQ show mandatory curtailment to be necessary in order to achieve attainment with the NAAQS.

1. Phase I Attainment Program

The first phase is composed of (a) a Public Education Program; (b) a Voluntary Wood Burning Curtailment Program; (c) prohibitions on the installation of non-certified wood stoves; (d) control of fugitive dust emissions from contributing sources; winter road sanding, mud tracking on to roadways, and other sources; (e) a program to replace uncertified wood stoves and; restrictions on open burning. All Ordinances to be implemented under the Phase I Attainment Program will be adopted prior to the Clean Air Act deadline of April 25, 1995.

Each element of the Phase I Program is discussed below:

(A) Public Education Program

The key to success for the overall program is a strong and effective Public Education Program that educates the community regarding the air quality program and gives them the tools to reduce PM10 particulate matter concentrations. Specific elements will include at a minimum:

1. Development and distribution of appropriate posters, brochures and pamphlets including a Lakeview fact sheet

Lakeview Air Quality Improvement Program

focusing on the local problem; a brochure explaining federal and state air quality requirements and what it means to the average Lakeview citizen and an explanation of the health effects caused by poor quality air.

2. Wood burning public information materials, including information on selecting a stove of the correct size, how to buy a certified wood stove or other non-wood burning heating system, tips on the efficient operation of a wood stove and fireplace, and a wood heating safety checklist. Brochures on fuel wood selection, characteristics, and wood seasoning will also be provided to the public.

3. Support for public forums on health effects of wood smoke and air quality that may be hosted by local groups.

4. News media involvement may include print, radio and television public service announcements, press releases, interviews, panel discussions and news reports. Photographs and advertisements will also be included in the Public Education Program.

5. In-person contact: Households which are noted to have excessive smoke from residential wood heating may be contacted in-person by Town staff and offered educational material on the air quality program, smoke related health issues, and other relevant materials.

Other elements which may be included are:

6. Contests and presentations through the school system to educate children on the seriousness of the problem.

7. Formation of a Speaker's Bureau to inform local groups on the nature of the problem, solutions, and the need for public involvement.

8. Public meetings may be held by local governmental bodies to discuss air quality issues.

9. All town agencies will display air quality educational materials. Private industries and businesses will be encouraged to distribute educational materials regarding the air program.

10. Promote displays explaining air quality conditions in Lakeview and proper wood stove operation during community activities: i.e., County Fair, Earth day, home shows, etc.

Lakeview Air Quality Improvement Program

(B) Wood heating Curtailment Program

The Town of Lakeview Voluntary Wood Burning Curtailment Program is the principal means to attain the National Ambient Air Quality Standards (NAAQS). If the Department of Environmental Quality (DEQ), in consultation with the Town of Lakeview and Lake County, determines that the Voluntary Program is insufficient to show attainment with the NAAQS and it is determined that emissions from residential wood burning are a significant contributing source to the PM10 particulate matter concentrations, a Mandatory Curtailment (Phase II) Program will be implemented. An Ordinance shall be drafted and submitted for adoption establishing, as needed, either a Voluntary or Mandatory Wood Smoke Curtailment Program.

Control measures implemented under a curtailment program include establishment of a Monitoring Program, a Public Education Program, measures to encourage improved performance of wood burning devices and inducements that will promote the use of high efficiency, clean burning heating appliances.

The Voluntary Program will consist of the following elements:

1. Air Quality forecasting information will be provided by the Oregon Department of Environmental Quality (DEQ), State Department of Forestry Smoke Meteorologist, or other appropriate agency. The forecasts will be based on National Weather Service and regional weather information as well as recent local measurements of air quality conditions. The DEQ will provide the air quality and weather measurements, and ensure the availability of forecasting, as well as provide a telephone answering machine to be used for the daily advisory announcement. Curtailment advisories will be provided to the public at the same time each day.

2. Wood Burning Curtailment Advisories will be the responsibility of the Town of Lakeview each day beginning no later than November 1 and continuing through February 28. At least one advisory will be issued each day substantially as follows:

"Green" Advisory

The "Green" wood burning advisory is called when air ventilation is forecasted to be good. Residential wood burning will be unrestricted during "Green" periods.

Lakeview Air Quality Improvement Program

"Yellow" Advisory

The "Yellow" advisory is made when air ventilation is forecasted to be poor and PM10 levels are forecasted to be elevated. All residents, except those with DEQ or EPA certified stoves, wood pellet stoves and persons using wood as a sole source of heat, are asked to curtail wood burning for the next 24 hours. Those continuing to burn are asked to use dry, well-seasoned wood; build small, hot fires and not dampen down their stoves.

"Red" Advisory

The "Red" advisory is made when air ventilation is forecasted to be poor and PM10 levels are forecasted to be approaching the NAAQS.

All residents, except those using wood as a sole source of heat or those using pellet stoves, are asked to curtail wood burning for the next 24 hours. Those continuing to burn are asked to use dry, well-seasoned wood; build small, hot fires and not dampen down their stoves.

The Town and Department of Environmental Quality will develop the criteria for establishing the Green, Yellow, and Red Day advisory. The wood burning advisories will be made available to the public through a telephone recording system and media announcements.

(C) Curtailement Program

This program will consist of periodic neighborhood surveys during both curtailment and non-curtailement periods. Results from these surveys will be used to evaluate the effectiveness of the Voluntary Curtailement Program and as a means of identifying areas that need to improve operation of their wood burning devices. The Town may take note of homeowners observed improperly operating wood stoves and provide information regarding proper wood burning techniques, and the Voluntary Curtailement Program.

(D) Uncertified Wood Stove Replacement Program

The Town will operate an uncertified wood stove replacement program. The program shall provide for the replacement of uncertified wood stoves in homes which use wood as a sole or primary source of heat. The Program shall give priority to low income homes. All uncertified wood stoves removed under this program shall be destroyed.

Lakeview Air Quality Improvement Program

(E) Ban on Installation of Non-Certified Wood Stoves

The Oregon Building Code prohibits the installation of non-certified wood stoves.

(F) Open Burning Restrictions

An Ordinance shall be drafted and submitted to the Town Council for adoption prohibiting open burning and the use of burn barrels from October 1st through February 28th each year except by permit.

(G) Burning of Wastes

An Ordinance shall be drafted and submitted for adoption prohibiting the burning in a wood stove or fireplace of wet or dry garbage; plastic; wire insulation; automobile parts; asphalt; petroleum products; petroleum treated materials; rubber products; animal remains, or animal or vegetable matter resulting from the preparation, cooking or service of food; disposable diapers; Styrofoam; chemically treated lumber; or any other material which normally emits dense smoke or noxious odors. Open burning of these materials shall be regulated as provided under Department of Environmental Quality, Oregon Administrative Rule Chapter 340 Division 23.

(H) Home Weatherization

The Town Council directs the coordinator to explore the feasibility of a Home Weatherization Program for low income homeowners or senior citizens to reduce their use of wood for space heating.

(I) Dust Control

Dust from winter road sanding within the Lakeview urban growth boundary is an occasional contributing source to PM10 particulate matter concentrations. The Town Council hereby directs the coordinator to proceed with the development of programs and Ordinances necessary to implement the following control program elements:

1. The Town Public Works policy will be as follows: After application, rapid clean-up of road sanding with a mechanical sweeper or other device shall be conducted as soon as practicable. The Town and the DEQ will also work with the Oregon State Highway Division to encourage their use of rapid clean-up and cleaner aggregate on state highways within the urban growth boundary;

Lakeview Air Quality Improvement Program

There is on going investigation into the effect of unpaved mill yards, unpaved roads, mud being tracked onto highways, etc.; and how to control those situations that are detrimental to good air quality.

2. Phase II Attainment Program

In the event that analysis by the Department of Environmental Quality, in consultation with the Town of Lakeview and Lake County, determines the Phase I Attainment Program to be inadequate to demonstrate attainment with the NAAQS for particulate matter, and it is determined by the DEQ that emissions from residential wood burning are a significant contributing source to the non-attainment problem, the Phase II Attainment Program shall be implemented.

The principal element of the Phase II program is a Mandatory Wood Burning Curtailment Program designed to assure at least a sixty-five percent (65%) reduction in wood smoke emissions on poor air quality winter days.

The Phase II Attainment Program includes all elements of the Phase I Program, substituting only the Mandatory Curtailment Program for the Phase I Voluntary Program.

(A) Mandatory Wood Burning Curtailment Program

The Town is hereby requested to develop a Mandatory Wood Burning Curtailment Ordinance in accordance with the National Clean Air Act which shall include all of the elements of the Phase I Voluntary Program described above plus the enforcement and penalty elements described below.

The Compliance Program shall include a frequency of neighborhood drive-through surveys in order to document public participation and compliance with the mandatory provisions; and through the enactment of an ordinance, a compliance policy which includes a schedule of penalties.

(B) Contingency Strategy Best Available Control Measures

The Clean Air Act Amendments of 1990 require the implementation of additional emission control measures should Lakeview fail to attain the National Ambient Air Quality Standards. Best Available Control Measures (BACM) would require a greater level of emission reduction from contributing pollution sources such as residential wood heating and industry. Such measures must be added to this program and implemented within three years of

Lakeview Air Quality Improvement Program

notification by the Environmental Protection Agency that Lakeview has failed to attain the NAAQS. If required, the Town of Lakeview is committed to the review and inclusion of such measures.

VI. PERIODIC PROGRAM REVIEW

The Lakeview Air Quality Program shall be reviewed each year by the Air Quality Advisory Committee, the Town of Lakeview, and the Department of Environmental Quality. The Town Air Quality Coordinator shall annually prepare a report describing the Town's progress toward attaining and maintaining the National Ambient Air Quality Standards, including recommendations received from the Advisory Committee to improve the program.

LAKEVIEW ORDINANCES

ORDINANCE NO. 748

RECEIVED

MAR 10 1995

AIR QUALITY DIVISION
Dept. Environmental Quality

AN ORDINANCE PROHIBITING THE USE OF SOLID FUEL BURNING DEVICES, PROVIDING CERTAIN EXEMPTIONS AND ESTABLISHING ENFORCEMENT CONTROLS THEREFOR.

WHEREAS, the health, safety and welfare of the citizens of the Town of Lakeview are adversely affected by the deterioration of air quality within the town limits; and

WHEREAS, wood combustion for space heating produces particulate matter and other pollutants which are injurious to the public health, and are a primary cause of deteriorated air quality within the Town of Lakeview; and

WHEREAS, a mandatory wood burning curtailment ordinance is essential to comply with the provisions of the federal Clean Air Act and assure healthful air quality; now, therefore,

THE TOWN OF LAKEVIEW ORDAINS AS FOLLOWS:

SECTION 1. DEFINITIONS:

As used in this ordinance, the following words, except where the context clearly indicates otherwise, mean:

(a) Air Pollution Alert: A 21 hour period commencing three hours after the designation by the Town of Lakeview of a Yellow Day or Red Day Air Quality Advisory.

(b) Air Quality Advisory: A public announcement to inform Town of Lakeview residents of forecasted air quality.

(c) Alternative Heat Source: A heat source other than a Solid Fuel Burning Device, with such heat source being capable of heating a residence in accordance with Oregon Building Code standards.

(d) Green Day: An Air Quality Advisory provided by the Town of Lakeview which forecasts acceptable air quality for the following 24 hour period.

(e) Yellow Day: An Air Quality Advisory provided by the Town of Lakeview which forecasts increased PM10 concentrations over the following 24 hour period. A Yellow Day forecast signifies that average PM10 concentrations are expected to reach levels of health concern, but which are not expected to approach the 24 hour national ambient air quality particulate health standard of 150 ug/m3.

(f) Red Day: An Air Quality Advisory provided by the Town of Lakeview which forecasts average PM10 concentrations at levels which are at risk of reaching and/or exceeding the 24 hour national ambient air quality particulate health standard of 150 ug/m3.

(g) Person: Any individual, partnership, corporation, company or other association.

(h) Oregon Certified Wood Stove: A Solid Fuel Burning Device certified by the United States Environmental Protection Agency or the Oregon Department of Environmental Quality as meeting emission performance standards specified in Oregon Administrative Rules, 340, Division 34, now in effect or which may be amended from time to time.

(i) Residence: A building used as a home, dwelling or place of abode.

(j) Sole Source of Heat: One or more Solid Fuel Burning Devices which constitutes the only source of heat in a Residence.

A Sole Heat Source is one which provides heat to the main living space of the Residence but does not include ancillary heating units in bed and bathroom areas.

(k) Solid Fuel Burning Device: A device designed for solid fuel combustion so that usable heat is derived for the interior of a Residence and includes, without limitation, solid fuel burning stoves, fireplaces or woodstoves of any nature, combination fuel furnaces or boilers used for space heating which can burn solid fuel. Solid Fuel Burning Devices do not include barbecue devices, natural gas fire and artificial fireplace logs or pellet stoves.

(l) Warning: An official notification that a person has been found by the Town of Lakeview to be burning on a non-authorized day.

SECTION 2: OPERATION OF SOLID FUEL BURNING DEVICE PROHIBITION:

(a) The operation of a Solid Fuel Burning Device within the Town of Lakeview during an Air Pollution Alert Period shall be prohibited unless an exemption has been granted by the Town of Lakeview pursuant to Section 3 below. A rebuttable presumption of a violation for which a warning or citation shall be issued shall arise if smoke is being discharged through a flue or chimney at any time during an Air Pollution Alert Period. Any person residing in the premises who is over the age of 18 shall be presumed to be the violator unless rebutted by contrary evidence.

(b) Visible smoke emissions created during a thirty (30) minute start up period and thirty (30) minutes after refueling are

exempt but such refueling shall be limited to once every four (4) hours.

(c) On or after two years from the effective date of this ordinance, no property owner shall rent or lease a Residence unless the same is equipped with an Alternative Heat Source. If the owner violates this subsection, the tenant shall not be charged with a violation thereof.

SECTION 3. EXEMPTIONS FROM PROHIBITION:

It shall be permissible for a Residence to operate a Solid Fuel Burning Device during a Red or Yellow Day when the head of that household has previously obtained from the Town of Lakeview Air Quality Office an exemption to operate the same. Exemption availability shall be limited to the following conditions:

(a) Sole Source: An exemption may be issued to the heads of households who sign a sworn statement declaring their reliance on a Solid Fuel Burning Device as the sole device providing heat for the main living space of their Residence. The availability of this exemption shall expire on or after two years from the effective date of this ordinance.

(b) Economic Need: An exemption for economic need to operate a Solid Fuel Burning Device may be granted to heads of households who otherwise qualify under the Sole Source exemption if the head of household can show that the total family income is less than 80% of the median income level for the Town of Lakeview as established by the Federal Department of Housing and Urban Development. There shall be no time limitation on the availability

of this particular exemption.

(c) Oregon Certified Wood Stoves: An exemption may be issued to the heads of household for the operation of an Oregon Certified Wood Stove in a Residence during a Yellow Day Air Quality Advisory. However, the availability of this exemption is strictly contingent upon the Oregon Certified Wood Stove producing no visible smoke. The operation of an Oregon Certified Wood Stove shall be prohibited during a Red Day Air Quality Advisory, unless some other applicable exemption has been granted.

SECTION 4. ENFORCEMENT AND PENALTIES:

Violation of a provision of this ordinance is punishable as follows:

(a) First offense violators of this ordinance shall receive a warning. The Town of Lakeview Air Quality Office shall notify the violator of their non-compliance by registered mail, which notice shall contain the penalty schedule.

(b) Second offense violators of this ordinance shall be punishable by a fine not to exceed \$25.00.

(c) Third offense violators of this ordinance shall be punishable by a fine not to exceed \$100.00.

(d) Subsequent violations shall be punishable by a maximum fine not to exceed \$250.00 per occurrence.

SECTION 5. IMPLEMENTATION:

This ordinance shall automatically become enforceable without further action by the Town of Lakeview, should the Town of

Lakeview fail to demonstrate to the Oregon Department of Environmental Quality reasonable further progress at the time said department conducts its air quality evaluation or if the Town of Lakeview fails to attain the National Air Quality Standard within the time frame specified by the federal Clean Air Act of 1990. Correspondingly, should the Town of Lakeview meet the Air Quality Standard imposed by the federal Clean Air Act of 1990, then this ordinance is of no force and effect.

SECTION 6. SEVERABILITY:

If any section, subsection, sentence or clause, or any portion of this Ordinance is, for any reason, held invalid or unconstitutional by a court of competent jurisdiction, such portion shall be deemed a separate, distinct and independent provision and shall not effect the validity of the remaining portion thereof.

This ordinance and its purposes being necessary for the preservation of public peace, health and safety of the Town of Lakeview and its inhabitants, an emergency is hereby declared to exist and this ordinance shall be in full force and effect at the time specified in Section 5 above.

No council member present requested that this ordinance be read in full so the same was read by title only and therefore passed unanimously by the Council of the Town of Lakeview and adopted on February 28, 1995.


Sherry Landers, Recorder/Custodian

LAKEVIEW ORDINANCES

ORDINANCE NO. 749

AN ORDINANCE PROHIBITING THE BURNING OF WASTE; RESTRICTING OPEN BURNING AND REPEALING ORDINANCE NO. 581.

WHEREAS, the health, safety and welfare of the citizens of the Town of Lakeview are adversely affected by the deterioration of air quality within the town limits; and

WHEREAS, unrestricted open burning and the burning of waste are injurious to public health and are a primary source of causing the deteriorated air quality; and

WHEREAS, an open burning and waste burning curtailment ordinance is essential in complying with the provisions of the federal Clean Air Act and to assure healthful air quality; now, therefore

THE TOWN OF LAKEVIEW ORDAINS AS FOLLOWS:

SECTION 1. DEFINITIONS: As used in this ordinance, the following words, except where the context clearly indicates otherwise, mean:

(a) Open Burning: Burning in burn barrels or incinerators, open outdoor fires and any other burning where combustion air is not effectively controlled and combustion products are not effectively vented through a stack or chimney.

(b) Permit: Written evidence indicating that an open burning activity, which would otherwise be prohibited by this ordinance, is permissible under certain circumstances and which is obtainable from the Lakeview Fire Department.

(c) Person: Any individual, partnership, corporation, company or other association.

(d) Solid Fuel Burning Device: A device designed for solid fuel combustion so that usable heat is derived for the interior of a residence and includes, without limitation, solid fuel burning stoves, fireplaces or woodstoves of any nature, combination fuel furnaces or boilers used for space heating which can burn solid fuel. Solid Fuel Burning Devices do not include barbecue devices, natural gas fire and artificial fireplace logs or pellet stoves.

(e) Waste: Wet or dry garbage, plastic, wire insulation, automobile parts, asphalt, petroleum products, petroleum treated materials, rubber products, animal remains, or animal or vegetable matter resulting from the preparation, cooking or service of food, disposable diapers, styrofoam, chemically treated lumber, or any other material, including commercial and industrial waste, which normally emits dense smoke or noxious odors.

(f) Green Day: An Air Quality Advisory provided by the Town of Lakeview which forecasts acceptable air quality for the following 24 hour period.

(g) Yellow Day: An Air Quality Advisory provided by the Town of Lakeview which forecasts increased PM10 concentrations over the following 24 hour period. A Yellow Day forecast signifies that average PM10 concentrations are expected to reach levels of health concern, but which are not expected to approach the 24 hour national ambient air quality particulate health standard of 150 ug/m3.

(h) Red Day: An Air Quality Advisory provided by the Town of Lakeview which forecasts average PM10 concentrations at levels which are at risk of reaching and/or exceeding the 24 hour national ambient air quality particulate health standard of 150-ug/m3.

SECTION 2. BURNING OF WASTE: The burning of waste at any time, whether by open burning or in a solid fuel burning device, as defined herein, is prohibited within the Town of Lakeview.

SECTION 3. RESTRICTIONS ON OPEN BURNING: All open burning is prohibited within the Town of Lakeview unless a permit for the same has been obtained.

SECTION 4. OPEN BURNING PERMITS: Open burning, which would otherwise be prohibited by the terms of this ordinance, may be permitted if a permit for the same is obtained from the Lakeview Fire Department. An open burning permit shall only be issued during a Green Advisory Period. Permits shall only be used on the day that it is issued and all open burning shall be completed prior to sundown. The Fire Chief of the Town of Lakeview is hereby authorized to issue such permits to residents of the Town of Lakeview subject to such reasonable terms and conditions as the Fire Chief, in his sole discretion, shall deem advisable for the protection of the residents of the Town of Lakeview. The terms and conditions of the open burning permit shall be specifically and expressly set forth on the permit. The issuance of a permit imposes no liability on the Town of Lakeview for any damage caused by open burning and the sole risk thereof lies with the person

obtaining the permit.

SECTION 5. ABATEMENT, ENFORCEMENT AND PENALTIES: Any violation of this ordinance or non-compliance with any of the provisions hereof shall be subject to legal proceedings to abate or enjoin such violation or non-compliance. In addition to abatement or injunctive proceedings, the following penalties may be imposed for violations or non-compliance:

(a) First offense violators of this ordinance shall receive a warning. The Town of Lakeview Air Quality Office shall notify the violator of their non-compliance by registered mail, which notice shall contain the penalty schedule.

(b) Second offense violators of this ordinance shall be punishable by a fine not to exceed \$25.00.

(c) Third offense violators of this ordinance shall be punishable by a fine not to exceed \$100.00.

(d) Subsequent violations shall be punishable by a maximum fine not to exceed \$250.00 per occurrence.

SECTION 6. SEVERABILITY: If any section, subsection, sentence or clause, or any portion of this Ordinance is, for any reason, held invalid or unconstitutional by a court of competent jurisdiction, such portion shall be deemed a separate, distinct and independent provision and shall not affect the validity of the remaining portion thereof.

This ordinance and its purposes being necessary for the preservation of public peace, health and safety of the Town of Lakeview and its inhabitants, an emergency is hereby declared to exist and this ordinance shall be in full force and effect after

its passage by the Lakeview Town Council.

No council member present requested that this ordinance be read in full so the same was read by title only and therefore passed unanimously by the Council of the Town of Lakeview and adopted on February 28, 1995.


Sherry Landers, Recorder/Custodian

LAKE COUNTY AIR QUALITY ORDINANCES

BEFORE THE BOARD OF COMMISSIONERS FOR LAKE COUNTY

ESTABLISHMENT OF A)
LAKEVIEW URBAN GROWN BOUNDARY) RESOLUTION
AIR QUALITY IMPROVEMENT PROGRAM)

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
MAR 27 1998

AIR QUALITY DIVISION

WHEREAS, the Town of Lakeview and Lake County recognizes the importance of maintaining healthful air quality; and

WHEREAS, the economic growth of the Town of Lakeview and Lake County requires clean air; and

WHEREAS, the federal Clean Air Act and amendments thereto mandate that air quality in all communities must attain and maintain the National Ambient Air Quality Standard to protect public health; and

WHEREAS, air quality within the Lakeview area has been determined to be in non-compliance with the National Ambient Air Quality Standard for particulate matter (PM10); and

WHEREAS, the establishment of an air quality improvement program is necessary to accomplish the foregoing goals;

IT IS HEREBY RESOLVED by the Lake County Commission that a Lakeview air quality improvement program be established to restore and maintain healthful air quality within the Urban Growth Boundary of the Town of Lakeview. Said program shall be a cooperative effort with Lake County, the Town of Lakeview, the Department of Environmental Quality and other involved parties.

IT IS FURTHER RESOLVED by the Commissioners of Lake County that such air quality plan shall be drafted and formulated

by the Lakeview Air Quality Committee for the ultimate purpose of obtaining an approximate 25% reduction in pollutant emissions in order to reach the attainment standard imposed by the federal Clean Air Act. The air quality improvement program shall implement, but is not necessarily limited to, the following procedures and programs:

(a) The establishment of a voluntary curtailment program which would achieve a compliance rate of approximately 30% to 35% for the purpose of reducing wood smoke emissions. Such voluntary program shall include a public information program, the establishment of a daily curtailment advisory call, and neighborhood drive through surveys.

(b) The operation of a woodstove replacement program for the purpose of replacing approximately 80 non-certified woodstoves in low income homes within the Town of Lakeview and the surrounding Urban Growth Boundary.

(c) The making of recommendations regarding the enactment of an ordinance prohibiting the burning of waste and establishing restrictions on open burning.

(d) The making of recommendations regarding the establishment of an ordinance prohibiting the use of solid fuel burning and establishing a mandatory program in the event the voluntary program does not achieve the required participation rate.

(e) Any other programs or policies, if approved by the County Commissioners, that would aid in improving air quality within the Town of Lakeview and surrounding Urban Growth

Boundary.

PASSED AND DATED this 15 day of March, 1995.

Jeremiah O'Leary
Jeremiah O'Leary, Chairman

Jane O'Keefe
Jane O'Keefe, Commissioner

Robert M. Pardue
Robert M. Pardue, Commissioner

LAKE COUNTY ORDINANCES

ORDINANCE NO. 29

AN ORDINANCE PROHIBITING THE USE OF SOLID FUEL BURNING DEVICES;
PROVIDING CERTAIN EXEMPTIONS AND ESTABLISHING ENFORCEMENT
CONTROLS THEREFORE.

WHEREAS, the health, safety and welfare of the citizens
of Lake County are adversely affected by the deterioration of air
quality within the Urban Growth Boundary of the Town of Lakeview;
and

WHEREAS, wood combustion for space heating produces
particulate matter and other pollutants which are injurious to
the public health, and are a primary cause of deteriorated air
quality within the Urban Growth Boundary of the Town of Lakeview;
and

WHEREAS, a mandatory wood burning curtailment ordinance
is essential to comply with the provisions of the federal Clean
Air Act and assure healthful air quality; now, therefore,

LAKE COUNTY ORDAINS AS FOLLOWS:

SECTION 1. DEFINITIONS:

As used in this ordinance, the following words, except
where the context clearly indicates otherwise, mean:

(a) Air Pollution Alert: A 21 hour period commencing
three hours after the designation by the Town of Lakeview of a
Yellow Day or Red Day Air Quality Advisory.

(b) Air Quality Advisory: A public announcement to
inform Lakeview area residents of forecasted air quality.

(c) Alternative Heat Source: A heat source other than
a Solid Fuel Burning Device, with such heat source being capable

of heating a residence in accordance with Oregon Building Code standards.

(d) Green Day: An Air Quality Advisory provided by the Town of Lakeview which forecasts acceptable air quality for the following 24 hour period.

(e) Yellow Day: An Air Quality Advisory provided by the Town of Lakeview which forecasts increased PM10 concentrations over the following 24 hour period. A Yellow Day forecast signifies that average PM10 concentrations are expected to reach levels of health concern, but which are not expected to approach the 24 hour national ambient air quality particulate health standard of 150 ug/m3.

(f) Red Day: An Air Quality Advisory provided by the Town of Lakeview which forecasts average PM10 concentrations at levels which are a risk of reaching and/or exceeding the 24 hour national ambient air quality particulate health standard of 150 ug/m3.

(g) Person: Any individual, partnership, corporation, company or other association.

(h) Oregon Certified Wood Stove: A Solid Fuel Burning Device certified by the United States Environmental Protection Agency or the Oregon Department of Environmental Quality as meeting emission performance standards specified in Oregon Administrative Rules, 340, Division 34, now in effect or which may be amended from time to time.

(i) Residence: A building used as a home, dwelling or place of abode.

(j) Sole Source of Heat: One or more Solid Fuel Burning Devices which constitutes the only source of heat in a Residence. A Sole Heat Source is one which provides heat to the main living space of the Residence but does not include ancillary heating units in bed and bathroom areas.

(k) Solid Fuel Burning Device: A device designed for solid fuel combustion so that usable heat is derived for the interior of a Residence and includes, without limitation, solid fuel burning stoves, fireplaces or woodstoves or any nature, combination fuel furnaces or boilers used for space heating which can burn solid fuel. Solid Fuel Burning Devices do not include barbecue devices, natural gas fire and artificial fireplace logs or pellet stove.

(l) Warning: An official notification that a person has been found by the Town of Lakeview or Lake County to be burning on a non-authorized day.

SECTION 2: OPERATION OF SOLID FUEL BURNING DEVICE PROHIBITION:

(a) The operation of a Solid Fuel Burning Device within the Urban Growth Boundary of the Town of Lakeview during an Air Pollution Alert Period shall be prohibited unless an exemption has been granted by the Town of Lakeview pursuant to Section 3 below. A rebuttable presumption of a violation for which a warning or citation shall be issued shall arise if smoke is being discharged through a flue or chimney at any time during an Air Pollution Alert Period. Any person residing in the premises who is over the age of 18 shall be presumed to be the

violator unless rebutted by contrary evidence.

(b) Visible smoke emissions created during a thirty (30) minute start up period and thirty (30) minutes after refueling are exempt but such refueling shall be limited to once every four (4) hours.

(c) On or after two years from the effective date of this ordinance, no property owner shall rent or lease a Residence unless the same is equipped with an Alternative Heat Source. If the owner violates this subsection, the tenant shall not be charged with a violation thereof.

SECTION 3. EXEMPTIONS FROM PROHIBITION:

It shall be permissible for a Residence to operate a Solid Fuel Burning Device during a Red or Yellow Day when the head of that household has previously obtained from the Town of Lakeview Air Quality Office an exemption to operate the same. Exemption availability shall be limited to the following conditions:

(a) Sole Source: An exemption may be issued to the heads of households who sign a sworn statement declaring their reliance on a Solid Fuel Burning Device as the sole device providing heat for the main living space of their Residence. The availability of this exemption shall expire on or after two years from the effective date of this ordinance.

(b) Economic Need: An exemption for economic need to operate a Solid Fuel Burning Device may be granted to heads of households who otherwise qualify under the Sole Source exemption

if the head of household can show that the total family income is less than 80% of the median income level for the Town of Lakeview as established by the Federal Department of Housing and Urban Development. There shall be no time limitation on the availability of this particular exemption.

(c) Oregon Certified Wood Stoves: An exemption may be issued to the heads of household for the operation of an Oregon Certified Wood Stove in a Residence during a Yellow Day Air Quality Advisory. However, the availability of this exemption is strictly contingent upon the Oregon Certified Wood Stove producing no visible smoke. The operation of an Oregon Certified Wood Stove shall be prohibited during a Red Day Air Quality Advisory, unless some other applicable exemption has been granted.

SECTION 4. ENFORCEMENT AND PENALTIES:

Violation of a provision of this ordinance is punishable as follows:

(a) First offense violators of this ordinance shall receive a warning. The Town of Lakeview Air Quality Office shall notify the violator of their non-compliance by registered mail, which notice shall contain the penalty schedule.

(b) Second offense violators of this ordinance shall be punishable by a fine not to exceed \$25.00.

(c) Third offense violators of this ordinance shall be punishable by a fine not to exceed \$100.00.

(d) Subsequent violations shall be punishable by a

maximum fine not to exceed \$250.00 per occurrence.

SECTION 5. IMPLEMENTATION:

This ordinance shall automatically become enforceable without further action by Lake County should the Town of Lakeview and the Urban Growth Boundary area fail to demonstrate to the Oregon Department of Environmental Quality reasonable further progress at the time said department conducts its air quality evaluation or if the Town of Lakeview and the Urban Growth Boundary area fails to attain the National Air Quality Standard within the time frame specified by the federal Clean Air Act of 1990. Correspondingly, should the Town of Lakeview and the Urban Growth Boundary area meet the Air Quality Standard imposed by the federal Clean Air Act of 1990, then this ordinance is of no force and effect.

SECTION 6. SEVERABILITY:

If any section, subsection, sentence or clause, or any portion of this Ordinance is, for any reason, held invalid or unconstitutional by a court of competent jurisdiction, such portion shall be deemed a separate, distinct and independent provision and shall not effect the validity of the remaining portion thereof.

This ordinance and its purposes being necessary for the preservation of public peace, health and safety of Lake County and its inhabitants, an emergency is hereby declared to exist and this ordinance shall be in full force and effect at the time

specified in Section 5 above.

No commission member present requested that this ordinance be read in full so the same was read by title only and therefore passed unanimously by the Commission of Lake County and adopted on March 15th, 1995.

Dated this 15th day of March, 1995.

Jeremiah O'Leary
Jeremiah O'Leary, Chairman

Jane O'Keefe
Jane O'Keefe, Commissioner

Robert M. Pardue
Robert M. Pardue, Commissioner

LAKE COUNTY ORDINANCES

ORDINANCE NO. 30

AN ORDINANCE PROHIBITING THE BURNING OF WASTE AND RESTRICTING OPEN BURNING.

WHEREAS, the health, safety and welfare of the citizens of the Town of Lakeview and the surrounding Urban Growth Boundary are adversely affected by the deterioration of air quality within that area; and

WHEREAS, unrestricted open burning and the burning of waste are injurious to public health and are a primary source of causing the deteriorated air quality; and

WHEREAS, unrestricted open burning is a safety hazard during certain periods of the year; and

WHEREAS, an open burning and waste burning curtailment ordinance is essential in complying with the provisions of the federal Clean Air Act and to assure healthful air quality; now, therefore

THE COUNTY OF LAKE ORDAINS AS FOLLOWS:

SECTION 1. DEFINITIONS: As used in this ordinance, the following words, except where the context clearly indicates otherwise, mean:

(a) Open Burning: Burning in burn barrels or incinerators, open outdoor fires and any other burning where combustion air is not effectively controlled and combustion products are not effectively vented through a stack or chimney.

(b) Permit: Written or verbal evidence indicating that an open burning activity, which would otherwise be prohibited by this ordinance, is permissible under certain

circumstances and which is obtainable from the Lakeview Fire Department.

(c) Person: Any individual, partnership, corporation, company or other association.

(d) Solid Fuel Burning Device: A device designed for solid fuel combustion so that usable heat is derived for the interior of a residence and includes, without limitation, solid fuel burning stoves, fireplaces or woodstoves of any nature, combination fuel furnaces or boilers used for space heating which can burn solid fuel. Solid Fuel Burning Devices do not include barbecue devices, natural gas fire and artificial fireplace logs or pellet stoves.

(e) Waste: Wet or dry garbage, plastic, wire insulation, automobile parts, asphalt, petroleum products, petroleum treated materials, rubber products, animal remains, or animal or vegetable matter resulting from the preparation, cooking or service of food, disposable diapers, styrofoam, chemically treated lumber, or any other material, including commercial and industrial waste, which normally emits dense smoke or noxious odors. Not included are clean wood wastes such as lumber, tree branches, paper and garden and yard waste.

(f) Green Day: An Air Quality Advisory provided by the Town of Lakeview which forecasts acceptable air quality for the following 24 hour period.

(g) Yellow Day: An Air Quality Advisory provided by the Town of Lakeview which forecasts increased PM10 concentrations over the following 24 hour period. A Yellow Day

forecast signifies that average PM10 concentrations are expected to reach levels of health concern, but which are not expected to approach the 24 hour national ambient air quality particulate health standard of 150 ug/m3.

(h) Red Day: An Air Quality Advisory provided by the Town of Lakeview which forecasts average PM10 concentrations at levels which are at risk of reaching and/or exceeding the 24 hour national ambient air quality particulate health standard of 150 ug/m3.

SECTION 2. BURNING OF WASTE: The burning of waste at any time, whether by open burning or in a solid fuel burning device, as defined herein, is prohibited within the Urban Growth Boundary of the Town of Lakeview.

SECTION 3. RESTRICTIONS ON OPEN BURNING: All open burning is prohibited within the Urban Growth Boundary of the Town of Lakeview unless a permit for the same has been obtained (see Section 4).

SECTION 4. OPEN BURNING PERMITS: Open burning, which would otherwise be prohibited by the terms of this ordinance, may be permitted if a permit for the same is obtained from the Lakeview Fire Department. An open burning permit shall not be issued during a Yellow or Red Advisory Period. Permits shall only be used on the day that it is issued and all open burning shall be completed prior to sundown. The Fire Chief of the Town of Lakeview is hereby authorized to issue such permits to residents of the Town of Lakeview and the surrounding Urban Growth Boundary subject to such reasonable terms and conditions

as the Fire Chief, in his sole discretion, shall deem advisable for the protection of the residents of the Town of Lakeview and surrounding Urban Growth Boundary. The terms and conditions of the open burning permit shall be specifically and expressly set forth on the permit or otherwise communicated to the requesting party. The issuance of a permit imposes no liability on the Town of Lakeview for any damage caused by open burning and the sole risk thereof lies with the person obtaining the permit.

SECTION 5. ABATEMENT, ENFORCEMENT AND PENALTIES: Any violation of this ordinance or non-compliance with any of the provisions hereof shall be subject to legal proceedings to abate or enjoin such violation or non-compliance. In addition to abatement or injunctive proceedings, the following penalties may be imposed for violations or non-compliance:

(a) First offense violators of this ordinance shall receive a warning. The Town of Lakeview Air Quality Office shall notify the violator of their non-compliance by registered mail, which notice shall contain the penalty schedule.

(b) Second offense violators of this ordinance shall be punishable by a fine not to exceed \$25.00.

(c) Third offense violators of this ordinance shall be punishable by a fine not to exceed \$100.00.

(d) Subsequent violations shall be punishable by a maximum fine not to exceed \$250.00 per occurrence.

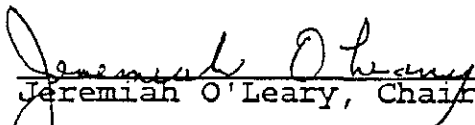
SECTION 6. SEVERABILITY: If any section, subsection, sentence or clause, or any portion of this Ordinance is, for any reason, held invalid or unconstitutional by a court of competent

jurisdiction, such portion shall be deemed a separate, distinct and independent provision and shall not affect the validity of the remaining portion thereof.

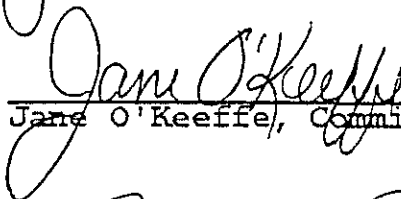
This ordinance and its purposes being necessary for the preservation of public peace, health and safety of Lake County and its inhabitants, an emergency is hereby declared to exist and this ordinance shall be in full force and effect after its passage by the Commissioners of Lake County.

No commission member present requested that this ordinance be read in full so the same was read by title only and therefore passed unanimously by the Commissioners of Lake County and adopted on March 15, 1995.

Dated this 15 day of March, 1995.



Jeremiah O'Leary, Chairman



Jane O'Keefe, Commissioner



Robert M. Pardue, Commissioner

Lakeview Nonattainment Area for
Particulate Matter 10 Microns or Less (PM10)
Legal Definition

The legal boundary for the Lakeview PM10 Nonattainment Area is the Lakeview Urban Growth Boundary (UGB), which is the area enclosed by the following boundary:

Beginning at the northeast corner of Section 4, R20, T39S; thence west to the northwest corner of Section 4, R20E, T39S; thence south to the southwest corner of Section 9, R20E, T39S and the intersection with State Highway 66; thence west along State Highway 66 to the intersection with the western fork of the East Branch of Thomas Creek; thence southerly along the western fork of the East Branch of Thomas Creek to the intersection with the western boundary of Section 16, R20E, T39S; thence south along the western boundary of Section 16, R20E, T39S to the southwest corner of Section 16, R20E, T39S; thence east to the southeast corner of Section 16, R20E, T39S; thence south to the southwest corner of Section 22, R20E, T39S; thence east for 1.2 kilometers (km) along the southern boundary of Section 22, R20E, T39S; thence on a line north to the intersection with the southern boundary of Section 15, R20E, T39S; thence east to the southeast corner of Section 15, R20E, T39S; thence further north 0.6 km along the eastern boundary of Section 10, R20E, T39S; thence west on a line to the intersection to the intersection with State Highway 395; thence north on a line 0.5 km; thence on a northwesterly line running parallel to State Highway 66 to the intersection with the southern boundary of Section 3, R20E, T39S and the private road in the same location; thence northwesterly along that private road 0.3 km; thence due west 0.1 km; thence due north 0.15 km; thence on a line due west to the intersection with State Highway 395; thence northwesterly along State Highway 395 for 0.7 km; thence north on a line 0.15 km; thence northeasterly on a line of 12 degrees for 0.4 km; thence northwesterly on a line of 108 degrees for 0.15 km; thence due east on a line to the intersection with the eastern boundary of Section 4, R20E, T39S; thence north to the northeast corner of Section 4, R20E, T39S (the point of beginning).

January 19, 1995

Oregon

DEPARTMENT OF
TRANSPORTATION

David Collier
Dept. of Environmental Quality
811 S.W. 6th Ave.
Portland OR 97204-1390

DISTRICT 11

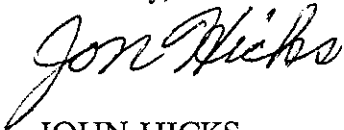
FILE CODE:

Dear David,

You have requested the Oregon Department of Transportation to reduce its estimated contribution to the PM 10 level in the Town of Lakeview.

As we discussed over the phone, we will work closely with the Town of Lakeview to sweep up the spent sanding material as soon as practical to reduce the PM 10 that becomes airborne due to passing traffic. In addition, we will attempt to find a cleaner source of sanding material when possible.

Sincerely,



JOHN HICKS
District 11 Manager

JH:mlm

cc: Tim Bednar

RECEIVED
JAN 24 1995



AIR QUALITY DIVISION
Dept. Environmental Quality

2557 Altamont Drive
Klamath Falls, OR 97603
(503) 883-5662
FAX (503) 883-5589

Environmental Quality Commission

- Rule Adoption Item
 Action Item
 Information Item

Agenda Item E
April 14, 1995 Meeting

Title:

City of Portland's COMBINED SEWER OVERFLOW FINAL FACILITIES PLAN:
Consideration for Approval.

Summary:

The August 1994 Amended Stipulation and Final Order (ASFO) pertaining to Portland's Combined Sewer Overflows (CSOs) establishes the level of CSO control to be achieved, and the phased deadlines for eliminating discharges of untreated combined sewage at the existing discharge points.

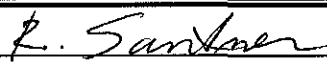
The City has submitted a Final Facilities Plan which describes the proposed strategy and detailed implementation schedule for meeting the ASFO requirements. These aspects of the Plan are subject to Commission approval.

After reviewing the Plan, the Department has concluded that the proposed facilities and schedule will meet the requirements of the ASFO. The proposed facilities can be expected to eliminate the discharge of undisinfected human waste to the Willamette River and Columbia Slough except during a limited number of severe storms. The facilities will therefore significantly advance attainment of the contact recreation beneficial use of these water bodies and enhance their value as urban amenities.

The Department notes that the Final Facilities Plan is an overall program management document and that implementation of the CSO control program over the coming decades will require many additional analytic, engineering and regulatory decisions. The impacts of treated and untreated combined sewage discharges for water quality parameters other than fecal contamination, and the impacts on groundwater that may result from the diversion of storm water runoff to infiltration sumps are issues that will warrant continuing attention.

Department Recommendation:

The Department recommends that the Commission approve the Control Strategies and Schedule set forth in the CSO Final Facilities Plan and that the Commission emphasize that the objective of the CSO Control Program is the attainment of Water Quality Standards and protection of Beneficial Uses.


Report Author


Division Administrator


Director

March 29, 1995

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

State of Oregon
Department of Environmental Quality

Memorandum[†]

Date: March 29, 1995

To: Environmental Quality Commission
From: Lydia Taylor, Interim Director *Lydia Taylor*
Subject: Agenda Item E, April 14, 1995, EQC Meeting

City of Portland's COMBINED SEWER OVERFLOW FINAL FACILITIES PLAN: Consideration for Approval.

Statement of the Issue

Under terms of the August 1994 Amended Stipulation and Final Order WQ-NWR-91-75 (ASFO) signed by the City of Portland (City) and the Environmental Quality Commission (Commission), the City has submitted a Final Facilities Plan pertaining to control of its Combined Sewer Overflows (CSOs). The ASFO specifies that "Final approval of the control strategies and schedules to eliminate untreated CSO discharges will be by the Commission." Background, analysis and recommendations for Commission action on the CSO Final Facilities Plan are presented herein.

Background

In August of 1991, the Commission and the City entered into the original Stipulation and Final Order (SFO) which required the City to undertake the planning and implementation activities necessary to virtually eliminate discharges of untreated combined sewage (sanitary sewage and storm water runoff) to the Willamette River and Columbia Slough from the City's combined sewer system.

In accordance with the original SFO, the City submitted a Draft CSO Facilities Plan in June of 1993. That document was reviewed through the joint Commission-City "Collaborative Process", leading to mutual agreement by the City Council and Commission to amend the SFO, effective August of 1994.

The ASFO establishes several key policy and implementation parameters that must be achieved by the City's CSO control program. The most important of these are the level

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of CSO control to be achieved and the base schedule for implementation of the program.

With respect to level of control, the ASFO specifies that discharges of untreated combined sewage to Columbia Slough will be eliminated in the regulatory winter (November through April) except during the five year return storm or greater, and in the regulatory summer (May through October) except during the ten year return storm or greater. Analogously, on the Willamette River, untreated combined sewage discharges must be eliminated in the winter except during the four in one year return storm or greater, and in the summer except during the three year return storm or greater.

With respect to base schedule, the ASFO specifies that, subject to the design storm frequencies noted above, untreated combined sewage discharges will be eliminated as follows:

- by December 1, 2001, at 20 discharge points, except all 13 discharge points on Columbia Slough by December 1, 2000
- by December 1, 2006, at 16 of the then remaining discharge points
- by December 1, 2011, at all of the then remaining discharge points

The Final Facilities Plan presents in detail how these targets for level of control and schedule will be achieved.

Authority to Address the Issue

Paragraph 12(a) of the ASFO provides for Commission approval of the control strategies and schedules in the Final Facilities Plan.

Alternatives and Evaluation

A. Proposed Control Strategies, Facilities and Implementation Schedule.

The City's proposed fundamental strategy for meeting the level of CSO control required by the ASFO is as follows:

1. **Reduce the quantity of combined sewage in the combined sewer system by significantly reducing the quantity of storm water runoff that enters the**

combined system. This will be accomplished by disconnection of roof drains, installation of storm water sumps in areas where soils are suitable, diverting some streams out of the sewer system and back to the Willamette, and in some limited locations building separate storm sewers. These activities are called the Cornerstone Projects. They will be implemented in phases around the combined sewer area. The reduction in combined sewage volume that results from these activities will be monitored and will be factored into the sizing of the conveyance, storage and treatment facilities.

2. Provide storage capacity for holding the quantity of combined sewage that exceeds the capacity of, and presently overflows from, the existing interceptor sewer lines that carry the combined sewage to the Columbia Boulevard Wastewater Treatment Plant. These structures, called tunnels and consolidation conduits, will be built parallel to the Willamette River and Columbia Slough. Once they are in place, when the capacity of the combined sewer lines is exceeded, the overflow will be to these storage structures, rather than to the water bodies. The combined sewage "captured" in these structures will be transported in them to Wet Weather Treatment Facilities.

3. Provide Wet Weather Treatment Facilities that will give primary treatment to the combined sewage that is "captured" in the storage structures. The treatment will consist of screening, sedimentation in settling basins, and disinfection. There will probably be two such treatment facilities.

The one that will treat the CSOs that now discharge to Columbia Slough will be located at the Columbia Boulevard plant site. It will discharge the treated combined sewage to the Columbia River.

The proposed location for a single facility that will treat CSOs that now discharge to the Willamette River is the Swan Island area. It will discharge to the Willamette River. However, the City is now conducting a public siting process which may result in a determination to have more than one facility located on and discharging to the Willamette, or to transport all of the captured Willamette overflows to an additional wet weather facility at the Columbia Boulevard site that would discharge to the Columbia River.

The underlying logic to be employed in sequencing the myriad of construction activities that comprise the overall CSO control program is to implement and evaluate the effectiveness of the flow reduction activities (i.e. Cornerstone Projects) in each geographic portion of the combined sewer area to the extent possible prior to finalizing

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Page 4

the design (i.e. sizing) of the storage/conveyance/treatment facilities that will serve that portion. Functionally, for purposes of implementing the CSO control program, the combined sewer area can be thought of as having three geographic parts: the sewer basins that flow to Columbia Slough; those that flow to the east bank of the Willamette; and those that flow to the west bank of the Willamette.

Thus, in summarized form, the CSO control program implementation sequence and schedule is:

- before 2000: complete/evaluate all Columbia Slough Cornerstone Projects
- by 2000: design/construct Columbia Slough wet weather storage/conveyance/treatment/disposal facilities
- by 2001: complete Willamette (east and west) limited sewer separations
- by 2001: complete analysis of flow reductions from westside Willamette stream diversions
- by 2006: complete Westside Willamette Cornerstone Projects (stream diversions)
- by 2006: complete wet weather storage/conveyance/treatment*/disposal* facilities for westside Willamette
- by 2006: complete remaining eastside Willamette Cornerstone Projects (sumps/roof drain disconnections); evaluate flows
- by 2011: design/construct wet weather storage/conveyance/treatment*/disposal* facilities for eastside Willamette

(* these will be at the same location)

This implementation schedule will meet the base schedule for control of untreated discharges required by the ASFO.

(Attachment A is an excerpt from the Executive Summary of the Final Facilities Plan giving more detail about the proposed facilities and implementation schedule.)

B. Water Quality Issues of Concern Pertaining to Implementation of the CSO Control Program.

It is the Department's perception that public concern over the CSOs focuses primarily on the fact that the undisinfected human waste in the combined sewage exposes people coming in contact with the receiving water bodies during and after discharges to the risk of contracting diseases. Because discharges presently occur so frequently and at all times of the year, the condition is highly detrimental to the contact recreation beneficial use of the affected streams and greatly reduces their value as urban amenities. The unsightly floating materials carried into the streams with the CSOs have a similar consequence.

The ASFO requires that discharges of untreated combined sewage be eliminated except during a limited number of severe storms. In the City's proposed control program, the combined sewage that now overflows will be "captured" and receive primary treatment including screening, sedimentation and disinfection before discharge. Therefore, it is a reasonable expectation that the impairment of beneficial uses resulting from the CSOs associated with fecal contamination and objectional floating material will be greatly diminished.

There are, however, other water quality issues associated with the CSOs and the proposed control measures which will be ongoing and will require the diligent attention of the Commission, the Department and the City for years to come. These issues will need to be addressed in the various permits, facility designs, and the required periodic updates of the CSO Facilities Plan.

1. Groundwater Impacts. The City's Plan calls for diverting a large portion of the storm water runoff that now enters the combined sewer system into infiltration sumps. These would be located in areas of suitable soils, particularly in the easterly and northeasterly portions of the combined sewer area, and only on residential streets. As part of the CSO control program, the City will build about 3600 sumps. Actually, about 1600 of the sumps have already been installed: the ASFO specifically required the City to continue implementation of the Cornerstone Projects as outlined in the Draft Facilities Plan of June 1993. The use of sumps is an important cost effective element of the CSO program because it allows the wet weather storage and treatment facilities to be significantly smaller.

The City has prepared a computer model analysis of the impacts of the use of sumps on groundwater. A limited impact has been projected. The City is also preparing a SUMP MANAGEMENT PLAN (see **Attachment B** for outline) that

will specify the management activities needed to ensure that the possible threat to groundwater posed by the sumps is minimized. A monitoring well network and groundwater sampling program will be established to evaluate any impacts on groundwater. Finally, the Department is evaluating the advisability of issuing a WPCF permit to the City regulating its sump program.

In view of the foregoing, the Department believes that the use of sumps for reducing combined sewage flow volume is appropriate. However, it is important to recognize that the use of sumps is not without risks. All parties should recognize that if the use of sumps proves to have an unacceptable impact on groundwater quality, steps to mitigate the impact will be required.

In order to put this issue in a broader context, it should be noted that in addition to the approximately 3600 sumps being installed for the CSO program, the City of Portland and neighboring jurisdictions in Multnomah County have another approximately 4000 publicly owned storm water infiltration sumps in use. Additionally, there is an undetermined but probably very large number of sumps (i.e., drywells) in use on private property in the "mid-county" area. There are other parts of the state as well where sumps are extensively used.

Department staff recently met to review this matter and came to an initial conclusion that the Underground Injection Control Rules (OAR 340-44) are probably not adequate to deal with this situation. The Department anticipates convening an advisory committee to examine this issue, leading to the development of proposed new rules.

2. Water Quality Impacts of Treated CSOs. As described above, almost all of the combined sewage that now overflows to the receiving streams will be "captured" and transported to "wet weather treatment facilities" where primary treatment will be provided prior to discharge. In the Facilities Plan, primary treatment has been assumed to consist of screening, sedimentation and disinfection. Assuming proper facilities design and operation, such treatment can be expected to produce effluent that meets water quality standards for floatables and solids, and for bacteria.

However, the water quality impact of the treated primary effluent for other parameters such as dissolved oxygen, pH, toxicity, temperature and dissolved solids, has not been determined.

Therefore, the Department and the City have initiated a process leading to NPDES Permit provisions to regulate the discharge of the wet weather treatment

facility to be located at the Columbia Boulevard Treatment Plant site, based on the objective that all applicable water standards be met and beneficial uses protected. Steps in the process will include technical analysis of the effluent character needed to attain water quality standards, and the specification of permit effluent limits and monitoring requirements. Subsequent to the issuance of permit limits, the City will design the facilities needed to achieve the permit limits, subject to review by the Department.

In several years, this process will be repeated for the Willamette wet weather treatment facility.

3. Water Quality Impacts of Remaining Untreated CSO Discharges. Even after completion of all CSO control facilities, there will still be occasional untreated CSO discharges when ASFO design storms are exceeded.

Untreated CSO discharges would almost certainly violate the bacteria water quality standard as presently formulated. With the assistance of an advisory committee, the Department has evaluated this issue. The Department has concluded that because the bacteria standard is intended to protect the contact recreation beneficial use, and because there is likely to be little contact recreation during severe storms, it would be appropriate to modify the standard such that it is not applicable when the ASFO design storms are exceeded. The Department will propose this as a change in the standard when the Commission considers revision of water quality standards as part of the Triennial Review this fall.

The likelihood that the remaining untreated discharges would violate water standards other than bacteria has not been finally determined. The modelling analysis to make this determination will not be possible until the engineering decisions as to the number, location, size, configuration and other characteristics of the remaining untreated discharge points have been made. This will take a few years.

The Department and the City have discussed the appropriate course of action if analysis does predict standards violations. In the Final Facilities Plan, the City has indicated that in such circumstances it may petition the Commission for revisions in standards such that the violations would be obviated, analogous to what is proposed for the bacteria standard.

Of course, it is the City's prerogative to request revisions. However, at this juncture the Department has no basis for concluding that revisions, other than the

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Page 8

bacteria standard, are warranted or appropriate. It seems clear to the Department that the contemplated change in the bacteria standard would have little detrimental impact on the contact recreation beneficial use. But it is not at all clear that violation of other water quality standards would be as benign with respect to other beneficial uses.

The Department recognizes that the possibility that potential standards violations will not be obviated by revision leaves the City's financial obligation for additional facilities and/or source control management practices open ended. Nevertheless, the Department does not believe it is appropriate to commit in advance to revision in standards. Proposed revisions should be considered when they are requested, and judged on their merits at that time.

Finally, the Department believes that this issue should be recognized as important, but that it should not become a "sticking point" to approval and implementation of the Final Facilities Plan at this time.

Summary of Any Prior Public Input Opportunity

The Department held a Public Hearing on the CSO Final Facilities Plan at the Northwest Region Office on January 31, 1995, at 8:00 PM. Immediately prior to the Hearing an informal Question and Answer session was held at 7:00 PM. Written comments were received until February 6, 1995. The Hearing/Comment process was made known to the public by distribution of **Chance to Comment** notices. A press release was also issued to area news media. The Hearing was announced on at least one local evening TV newscast prior to the event. Copies of the Final Plan were placed for public inspection at the Northwest Region Office and at the Downtown, North Portland, St. Johns and Midland branches of the Multnomah County Library.

Two people gave oral testimony at the Hearing. One written comment was received. **Attachment C** summarizes the comments received and provides the Department's responses.

In December 1994, before submitting the Final Facilities Plan to the Department, the Portland City Council held a hearing on this item during one of its regular sessions. Other than staff and consultants, no one was in the audience and no testimony was given. This session was later shown on local cable TV on **CITY COUNCIL LIVE**.

Conclusions

1. The Department believes that the proposed control strategies, schedule and facilities set forth in the City of Portland's CSO Final Facilities Plan are viable, appropriate and cost-effective means for achieving the CSO control requirements established in the Amended Stipulation Final Order.
2. The Department further believes that it is important that all persons concerned with water quality of the Willamette River and Columbia Slough recognize that notwithstanding the mass of data and analysis contained in the Final Facilities Plan and its supporting technical documents, it is essentially an overall management plan painted in broad brush strokes. Achieving control of Portland's CSOs will be a massive undertaking carried out over two decades. A great many analytic, regulatory, engineering and financial steps lie ahead. Successful implementation of the Plan will require the continuing efforts of all involved parties. The ASFO affords the City the opportunity to submit updated facilities plans in the years 2001 and 2006 which may propose modifications of the CSO control program based on actual experience to that point, or on the availability of new technologies. The ASFO and NPDES Permit provisions will remain as the enforceable regulatory instruments defining the performance standards for CSO control that the City must meet.

Recommendation for Commission Action

It is recommended that the Commission adopt the following motion:

The Environmental Quality Commission hereby approves the Control Strategies and Schedule set forth in the City of Portland's Combined Sewer Overflow Final Facilities Plan. The Commission desires that the City proceed with implementation of the Plan and with implementation of all activities necessary to fulfil the requirements of the Amended Stipulation and Final Order.

In approving the Plan, the Commission emphasizes that the necessary objective of the CSO Control Program is attainment of Water Quality Standards and protection of Beneficial Uses. The Commission is aware that it will soon consider a proposed revision in the Bacteria Standard, and is aware of the rationale for the proposed revision. However, at this point in the planning and implementation of the CSO Control Program, revision of other standards protecting surface and ground water should not be assumed.

Memo To: Environmental Quality Commission
Agenda Item E
April 14, 1995 Meeting
Page 10

Attachments

- A. Excerpts from the Final Facilities Plan Executive Report.
- B. Sump Management Plan Outline.
- C. Public Hearing Report including summary of comments, responses, and copy of the written comment.

Reference Documents (available upon request)

City of Portland: CSO Final Facilities Plan; Financial Plan; Executive Report;
December, 1994

Amended Stipulation and Final Order, No. WQ-NWR-91-75

Approved:

Section: Neil Mullone

Division: Tom Despham

Report Prepared By: Richard J. Santner

Phone: 229-5219

Date Prepared: March 29, 1995

RJS
PDX-CSO.PLN
March 29, 1995

ATTACHMENT A

excerpt from:

Executive Report

Combined Sewer Overflow Final Facilities Plan

City of Portland, December 1994

(Note: some of the information contained on the color graphics in the Executive Report has been lost when photo reduced and rendered into black and white herein.)

Cornerstone Projects

Cornerstone Projects were developed, evaluated, and recommended as an early step in developing CSO control alternatives. These projects represent cost-effective means for reducing stormwater inflow and, therefore, CSOs. The projects can be implemented early on and are common to all storage/treatment alternatives, regardless of total level of control to be achieved.

The recommended Cornerstone Projects fall into five categories:

- Optimization of the existing interceptor system through modification of the diversion structures
- Reduction of inflow through installation of stormwater infiltration sumps in residential areas in suitable soils
- Reduction of inflow through disconnection of residential roof drains in sumpable areas
- Diversion of west side streams from the combined sewer system
- Selected local sewer separation to eliminate CSOs at 14 Willamette River outfalls in high-use areas and at 2 Columbia Slough outfalls

The general location of these projects is shown in Figure 3-1.

Interim Improvements and Dry Weather Overflow Abatement

Concurrently with the development of the Facilities Plan, two related studies evaluated key components of CSO control: interim improvements and dry weather overflow abatement (HDR Engineering, May 1993; HDR Engineering/Black and Veatch, 1993).

The recommendations of the two studies included roof drain disconnections and sewer system optimization through modification of diversion structures. The City began these modifications in 1993, which will be completed by March 1995. The hydraulic models have been updated to reflect this system optimization.

Stormwater Infiltration Sumps

Sumps are installed by BES in low-traffic intersections serving residential areas. Surface runoff from driveways, sidewalks, and streets is directed to the sump through storm inlets. Sumps are not installed in commercial or industrial areas. Major arterials, district collector streets, and commercial-zoned neighborhood collector streets are excluded from the sump program.

Where roof drains or downspouts are not connected to the combined system but instead flow directly to the gutter, roof runoff will also be collected by the sump. A two-chambered design results in the capture of debris and sediments in the first chamber prior to release of the stormwater into the ground in the perforated second chamber. The first chamber must be cleaned out periodically (every 3 to 5 years) to ensure proper functioning.

Sumps are not considered suitable for Portland's west side because of slope and soils. The Cornerstone Projects include installation of an estimated 4,000 sumps in the red, orange, and yellow zones shown in Figure 3-1. Of these, nearly 2,000 sumps were installed in the Columbia Slough basins in 1993 and 1994.

Roof Drain Disconnections

When roofs are directly connected to the combined sewer via downspouts, the sewer system is required to transport relatively clean rainwater. Disconnecting the roof drains and providing alternative means for stormwater disposal will reduce inflow and, therefore, CSOs. Roofs represent approximately half the impervious area in typical residential areas. Roof drain flow currently is discharged in several ways:

- To onsite dry wells; this method does not contribute stormwater to the collection system.
- To the street gutter via overland flow (splash blocks); some fraction of the stormwater (not absorbed into the ground) drains to the gutter and is currently collected by street inlets and discharged to the combined system, but it could be captured by sumps if they were installed.
- To the street gutter via underground laterals; stormwater is currently collected by street inlets and discharged to the combined system, but it could be captured by sumps if they were installed.
- To the sewer via a separate connection near the street; some of these directly connected drains could easily discharge to the street gutter.
- To the sewer via a single or multiple connection near the residence; these directly connected drains would be difficult to reroute to the gutter without constructing new laterals.

In addition to the roof flow from the 5 percent of residences that already discharge to the gutter, it was assumed for this analysis that roof flow from approximately 25,000 residences could be disposed of onsite or be redirected to drain to the gutter and be captured by sumps. This represents nearly half of the directly connected residential roof drains in the suitable areas shown in the red, orange, and yellow zones in Figure 3-1. A more comprehensive program could disconnect up to 38,000 residences.

BES has reviewed the methods of disconnection and identified mechanisms for implementation. In 1994, a pilot program tested the technical and administrative features of a full-scale program. The program included review of existing city and state ordinances and codes and the evaluation of financing and incentive program options.

The findings of the pilot program were as follows:

- Splash blocks are suitable for a large percentage of houses.
- A volunteer program would not attain the number of disconnections necessary for a significant reduction of CSOs.

Based on the success of the pilot roof drain disconnection program, the full-scale program is anticipated to begin in the Columbia Slough basins in 1995 and in the Willamette River east basins in 1997 or 1998.

Stream Diversion

As Portland developed, streams that drain the west side were channelized and routed into pipes, together with sewage, that discharged to the Willamette River. Later, the west side interceptor was built to intercept part of the basin flow and carry it to the CBWTP for treatment. Currently, this stream flow competes with other basin inflow for interceptor capacity. Diversion of this stream flow to a new storm drain system to the river will provide additional interceptor capacity for combined sewage. Streams that are recommended for diversion are in the Tanner, Nicolai, Woods, Sheridan, and Carolina basins. Three pipeline projects will remove flow from these five streams.

Predesign studies have been completed for the 27,000-foot Tanner/Nicolai diversion line. Detailed design has begun on several portions. As part of the predesign study (KCM, 1994), opportunities for MOAs were identified. In the upper basin, which generates the runoff to be conveyed in the new Tanner Creek Diversion, activities that could improve the quality of the contributing flow were identified. As the CSO program is implemented, a screening process will be used to determine the timing and funding source for these additional activities or amenities.

Local Sewer Separation

Local sewer separation was considered for basins where major basin relief problems were projected to occur after sump and roof drain disconnection projects or stream diversion projects were implemented. Basins that discharge to high-priority zones on the Willamette River were strong candidates for separation.

Local separation will include some sumps where effective, a new storm or sanitary sewer system, and roof drain disconnection where cost-effective. Complete separation of the entire basin may not be required to control overflows to the degree required by the ASFO; rather,

a combination of diversion structure modification and local separation may provide the necessary CSO control. Separation will be implemented where practicable within the basin. The following basins have been recommended for local separation or local outfall control:

- Willamette basins:
 - Mill-separate (completed)
 - Mill/Jefferson-separate (completed)
 - Glen Harbor-control (completed)
 - N.W. 110th-control or separate
 - St. Johns B-separate (three outfalls) and control (one outfall)
 - Fiske B-separate
 - Lents 1-partially separate
 - Balch-partially separate
 - Sellwood-separate

- Columbia Slough basins:
 - St. Johns A-separate
 - Oswego-separate

These 11 projects will provide CSO control at 14 outfalls on the Willamette River and 2 outfalls on the Columbia Slough.

Separated stormwater from the two Columbia Slough basins will be treated at a proposed constructed wetlands to be built along the slough at the Ramsey Lake site. It may also be cost-effective to separate the Oregonian basin as well, with stormwater being routed to the wetlands. A new Ramsey Lake trunk line will convey the separated stormwater to the wetlands. In addition, two stormwater detention ponds are being built as part of the St. Johns B sewer separation project.

Benefits and Costs of Cornerstone Projects

The extent and effectiveness of the Cornerstone Projects were estimated, and the capital and O&M costs were developed. For planning purposes, the estimated capital cost of the Cornerstone Projects is \$190 million in July 1993 dollars (Table 3-2). This results in an estimated 43 percent reduction in CSOs. In addition, it reduces the cost of necessary basin relief projects, as discussed in the next section.

The Facilities Plan includes the following recommendations regarding Cornerstone Projects:

- The Cornerstone Projects should be adopted as the early action components of the CSO program.

- Additional confirmation of suitable areas for sumps and disconnectable roof drains, together with identification of the costs and efficiencies of both these inflow reduction techniques, should be initiated as soon as possible.

- Following the early implementation of the Cornerstone Projects, their effectiveness should be confirmed. Both the necessary basin hydraulic relief projects and CSO storage/treatment components should be refined prior to design and implementation.

Table 3-2 Cornerstone Project Benefit and Cost Summary			
Project Element	Percentage of Cornerstone Program Costs	Capital Cost* (1,000 dollars)	Stormwater Inflow Reduced (MG/year)
Infiltration sumps	24	\$46,000	2,000
Roof drain disconnection in sumped areas	29	55,000	800
Stream diversion	24	46,000	550
Local separation (with roof drain disconnection)	23	43,000	400
Total Cornerstone Projects	100	\$190,000	3,750

*July 1993 dollars (ENR CCI = 5150)

Basin Hydraulic Relief

While the main focus of the CSO program is to control discharge of untreated combined sewage into receiving waters, an additional concern is to control backups of combined sewage into residences and buildings that occur because of insufficient conveyance system capacity. Basement flooding is a widely documented problem in the existing system. A decision was made early in the CSO program to determine the program elements that would provide sufficient capacity in the basin sewer systems to carry the BES 25-year design storm.

A major secondary benefit of the Cornerstone Projects is the elimination of many conveyance system capacity problems through reduction of stormwater inflow. Following implementation of the recommended Cornerstone Projects, limited relief of existing basin sewers will still be required to provide the City's desired level of flooding protection. The relief projects were identified, and planning level costs were developed. The estimated cost, assuming the implementation of the Cornerstone Projects as recommended, is approximately \$40 million to \$70 million; this estimate is not included in the estimated cost for the CSO program. Without the Cornerstone Projects, basin relief costs would be significantly greater. Previous estimates for basin relief without Cornerstone Projects, developed during this project, ranged from \$270 million to \$400 million. The investment of \$190 million for Cornerstone Projects results in the reduction of the basin relief cost by \$200 million to \$330 million. At the same time, CSOs are reduced by 43 percent.

General Characteristics of Storage/Treatment Configuration

Both the Columbia Slough and the Willamette River storage/treatment systems will function in the same general manner. Overflows will be diverted from CSO outfalls to new consolidation conduits that will convey the captured overflow to new WWTFs for primary treatment and disinfection and subsequent release to the Willamette or Columbia Rivers. Inline and offline storage will be used to lower peak flows to existing interceptor sewers and the WWTFs.

The sizing of the storage/treatment elements was performed at a planning level and assumes the completion of the Cornerstone Projects as presented in Chapter 3. Hydraulic models were used to quantify remaining flows in excess of interceptor capacity and the existing conveyance system was examined to determine logical locations for conveyance, storage, and treatment facilities.

The consolidation conduits were sized to provide conveyance for the design storm, which varies according to the CSO-impacted receiving stream (three overflows per 10 years for the Columbia Slough; four per winter and one per three summers for the Willamette River). Construction of consolidation conduits by shallow or deep tunneling was assumed where the conduit size and/or depth was too great for open-cut trench installation. Where tunnels will be used, drop structures will be required to introduce flow from conduits and to dissipate energy from incoming water. Since construction of drop structures is costly, groups of outfalls will be consolidated with each drop structure using shallow consolidation conduits.

Storage, either inline or offline, reduces the peak flow reaching downstream conveyance and treatment in facilities and, therefore, their required capacities. Offline storage, recommended only on the Willamette River system, consists of a west side tank that fills as the interceptor becomes full and empties back to the interceptor as capacity becomes available. This tank will be either a covered surface or underground tank. Inline storage is provided by oversizing conduits. As the Columbia Slough and Willamette River systems were developed, a cost-effective balance between storage and treatment units was developed. The resulting recommended sizing reflects an optimum, cost-effective balance.

For planning purposes, it was assumed that treatment of CSOs generated in the Columbia Slough basins will occur at the CBWTP site by building additional headworks, primary treatment, and disinfection units. The recommended configuration for treatment of Willamette River CSOs includes the construction of a new WWTF on the east bank of the Willamette River. For planning purposes, this was assumed to be located in the Riverside basin, near Swan Island.

Pump stations at the WWTFs will receive flow from the consolidation conduits and tunnels and lift the flow to the surface for primary treatment and disinfection. Flow from the Columbia Slough consolidation conduit can be routed to the CBWTP secondary treatment units when capacity is available. The Willamette River influent pump station will be configured to allow flow lifted from the tunnel to be discharged back to the interceptor for transport to CBWTP when interceptor capacity is available. Solids removed during treatment at the Willamette River WWTF will be released back into the interceptor for conveyance to the CBWTP.

Recommended Storage/Treatment Configuration for the Columbia Slough

The following facilities, in addition to Cornerstone Projects, have been proposed to eliminate CSO water quality violations to the Columbia Slough as specified by the ASFO:

- Conveyance and storage conduit (consolidation conduit)
- Wet weather treatment facility and influent pump station
- Treatment facility effluent pump station
- Treatment facility effluent outfall

The Columbia Slough has been designated water quality limited. Concurrent planning activities will determine what additional controls on stormwater entering this receiving water may be required to meet the proposed TMDLs issued by DEQ.

The ASFO requires elimination of CSO-related water quality violations by December 1, 2000, except during storms greater than or equal to the two design storms. These storms are the 5-year winter storm and the 10-year summer storm. The Columbia Slough CSO control facilities were sized to convey and treat CSOs generated by the 13 Columbia Slough basins, following the implementation of the Cornerstone Projects, based on peak overflow rates from the 10-year summer storm event (Chapter 3).

Combinations of treatment capacity and inline storage were tested to determine a cost-effective balance. A 75-mgd WWTF, a 4,600-foot 42-inch-diameter conduit, and an 18,000-foot, 11-foot-diameter conveyance conduit have been recommended. A 75-mgd influent pump station, a 75-mgd effluent pump station, and a new outfall line to the Columbia River will also be required. This larger capacity, compared to the draft Facilities Plan recommendation of 56 mgd, reflects current preferences on sizing units at the CBWTP site. A smaller tunnel (11-foot-diameter) results.

Figure 4-1 illustrates the recommended Columbia Slough storage/treatment elements. A brief description of each facility follows.

Consolidation Conduit

Two sections of consolidation conduit will likely be located along Columbia Boulevard to intercept overflow from the drainage basins that discharge to the Columbia Slough. Although other alignments are currently being reviewed, this alignment has been assumed for planning purposes. The eastern portion of the conduit will be constructed by tunneling (18,000 feet). The western portion of the conduit will be constructed by conventional open trench methods of construction (4,600 feet). For planning purposes, a uniform diameter of 11 feet was selected for the eastern, tunneled portion to provide the required carrying capacity and storage volume to handle overflow resulting from the 10-year summer design storm. This tunnel size assumes a 75-mgd WWTF capacity. The open trench portion will be 42 inches in diameter. The estimated capital cost of the consolidation conduit is \$63 million.

Treatment Facility Pump Stations

An influent pump station will be required to lift flow from the consolidation conduit to the WWTF headworks. An effluent pump station and outfall will be required to convey flow from the WWTF to the Columbia River. The firm capacity of the both pump stations will match the maximum capacity of the WWTF, 75 mgd. The estimated capital cost of the influent pump station is \$15 million. The cost of the effluent pump station is included in the WWTF cost.

Wet Weather Treatment Facility

The Columbia Boulevard WWTF will likely be located at the CBWTP site. It will be sized for a treatment rate of 75 mgd. For planning purposes, the facility will include screening, sedimentation, chlorination, and dechlorination processes for CSO treatment. Specific treatment technologies will be evaluated during predesign, including alternative means of disinfection. For ease of operation, the facilities may be integrated into the existing facility. The estimated capital cost of the WWTF and effluent pump station is \$21 million.

BES is preparing a separate facilities plan for the CBWTP and the Columbia Boulevard WWTF. That study is examining an integrated facility in order to provide maximum opportunity for captured CSO to receive full treatment.

Treatment Facility Effluent Outfall

The outfall for conveying effluent from the Columbia Boulevard WWTF to the Columbia River will be about 72 inches in diameter and extend an estimated 12,000 feet to the point of discharge. The outfall would cross the Columbia Slough and the North Portland Channel before terminating in the Columbia River. The estimated capital cost of the treatment facility effluent outfall is \$21 million.

Recommended Storage/Treatment Configuration for the Willamette River

The preferred configuration, as developed in the draft Facilities Plan, is the single Willamette River WWTF configuration. Following the amendment of the SFO in August 1994, the enhanced draft federal level of control alternative was modified to meet the requirements of the ASFO. Sizing of elements, costs, and performance are slightly different for the recommended plan for the Willamette River than that shown in Table 4-1.

The single Willamette River WWTF configuration will require the siting and construction of a new 340-mgd WWTF on the Willamette River to provide primary treatment of CSOs captured from the west side and the east side Willamette River basins.

Two alternative configurations were considered for the ASFO level of control. The Columbia Boulevard WWTF configuration was evaluated in detail during preparation of the draft plan. This configuration would involve the conveyance of all CSOs to the CBWTP for treatment at a new 392-mgd WWTF. The cost-effectiveness of a multiple Willamette River WWTF configuration was evaluated on an initial basis during 1994. Both of these alternative configurations are more costly than the preferred configuration; however, both would provide the same level of CSO abatement and both could be implemented within the program phasing presented for the preferred configuration.

At this time, it is recommended that the single Willamette River WWTF configuration be implemented as the preferred option. However, as all three configurations satisfactorily comply with the ASFO, all three should be considered as acceptable plans. As early program activities, such as siting the Willamette River WWTF facility, are completed, the City will choose which configuration to implement. Future updates of the Facilities Plan, required in 2001 and 2006, will specify in greater detail the features of the plan actually being implemented.

The recommended facilities to meet the ASFO for the Willamette River basins, assuming the single Willamette River WWTF configuration, consist of the following:

- Southwest interceptor modifications
- Conveyance and storage conduits on the east and west side of the river with access and drop shafts
- Covered surface or underground storage facility on the west side
- Three pump stations and two force mains
- Wet weather treatment facility, constructed in two phases
- Treatment facility effluent outfall

Figure 4-2 shows the configuration of the recommended CSO facilities for the Willamette River basins. The sizing of these facilities assumes completion of the Willamette River basin Cornerstone Projects as described earlier, including the minimum level of roof drain disconnection (46 percent). Following completion of the Cornerstone Projects, actual reduction of inflow should be confirmed, and the sizing of the storage/treatment elements modified prior to initiation of final design.

Southwest Interceptor Modifications

The Southwest interceptor system, which begins in the California basin and ends at the Ankeny pump station, will require modification to alleviate the need for a consolidation conduit in this area. The California storage facility, as described below, will handle the overflows from the California and Carolina basins.

The existing 42-inch-diameter Southwest interceptor will be paralleled by a second 42- to 66-inch conduit in the Woods/Sheridan/Mills basins. The Lowell, Woods, and Sheridan basin diversion structures will be significantly modified, including construction of new underflow conduits.

There are two variations of this plan that can be examined further during predesign. The first variation is the separation of Lowell basin owing to its small size, high percentage of impervious surface, low elevation, and location. Separation would eliminate the CSO outfall from this small basin. The second variation is the oversizing of the 42-inch parallel conduit to provide 0.4 MG of inline storage for Woods and Sheridan basins.

The costs for the Southwest interceptor modifications have been included in the costs for the conveyance conduits described below.

Conveyance and Storage Conduits

Two conveyance and storage conduits will be constructed as part of the Willamette River CSO facilities. A 9,800-foot-long, 10-foot-diameter tunnel will be constructed on the west side of the Willamette River extending from Outfall 11 in the Tanner basin to the proposed Balch pump station. A 22,900-foot-long, 12-foot-diameter tunnel will be constructed on the east side of the Willamette River extending from Outfall 29 in the Division basin to the proposed Riverside (Swan Island) WWTF. Five drop shafts are included on the east side.

Additional conveyance conduits will be constructed. One conduit, as shown in Figure 4-2, will consolidate CSOs from the California and Carolina basins to be transferred to the California storage tank. As discussed in the previous section, the Southwest Interceptor will be paralleled in the Woods/Sheridan/Mill basins. Several additional consolidation conduits, not shown in the figure, will be needed on the east side to minimize the number of drop shafts. The cost estimate includes conduits ranging from 42 to 72 inches in diameter for the Oak/Holladay basins, Alder basin, and Division/Taggart basins.

The capital cost of the conveyance and storage conduits is estimated to be \$167 million.

California Storage Facility

An underground concrete storage facility will be constructed in the California basin to handle CSOs generated in the California and Carolina basins. After storm events, the stored CSOs will be pumped from the storage tank back into the Southwest interceptor for conveyance to the CBWTP. The storage tank will hold 2.5 MG, and will have a peak pump-out rate of approximately 6 mgd. For planning purposes, it was assumed to be an underground tank; however, it could be constructed as a covered surface tank.

The capital cost of the storage tank is estimated to be \$13 million.

Pump Stations and Force Mains

Two new pump stations will be constructed as part of the Willamette River CSO facilities. The Balch pump station will be located on the west side of the river between Balch and Nicolai basins and will pump captured CSO from the west side conveyance/storage tunnel across the river to the WWTF. The Balch pump station will have a firm capacity of 130 mgd. The Riverside pump station will be located on the east side of the river at the proposed Riverside WWTF. As the WWTF influent pump station, it will lift captured CSO from the east side conveyance/storage tunnel to the WWTF headworks.

Additional pump station capacity of 56 mgd will be required in the CBD basin to prevent overflows at the Ankeny pump station. Either the Ankeny pump station could be upgraded or a new (third) pump station could be constructed.

Two force mains are also provided to transfer CSOs from the CBD/Ankeny pump station to the west side consolidation/storage tunnel and from the Balch pump station across the Willamette River to the Riverside WWTF. These force mains are estimated to be 54 inches in diameter.

The pump stations will be constructed to allow pumping of the captured CSOs from the conveyance/storage tunnels back to the west side and north side interceptors when capacity becomes available, such as at the end of a storm event. This will allow conveyance of CSOs to the CBWTP for secondary treatment to the maximum extent possible, one of the EPA nine minimum controls.

The estimated capital cost of the west side pump station and force main is \$42 million. The cost of the WWTF influent pump station is \$36 million.

Wet Weather Treatment Facility

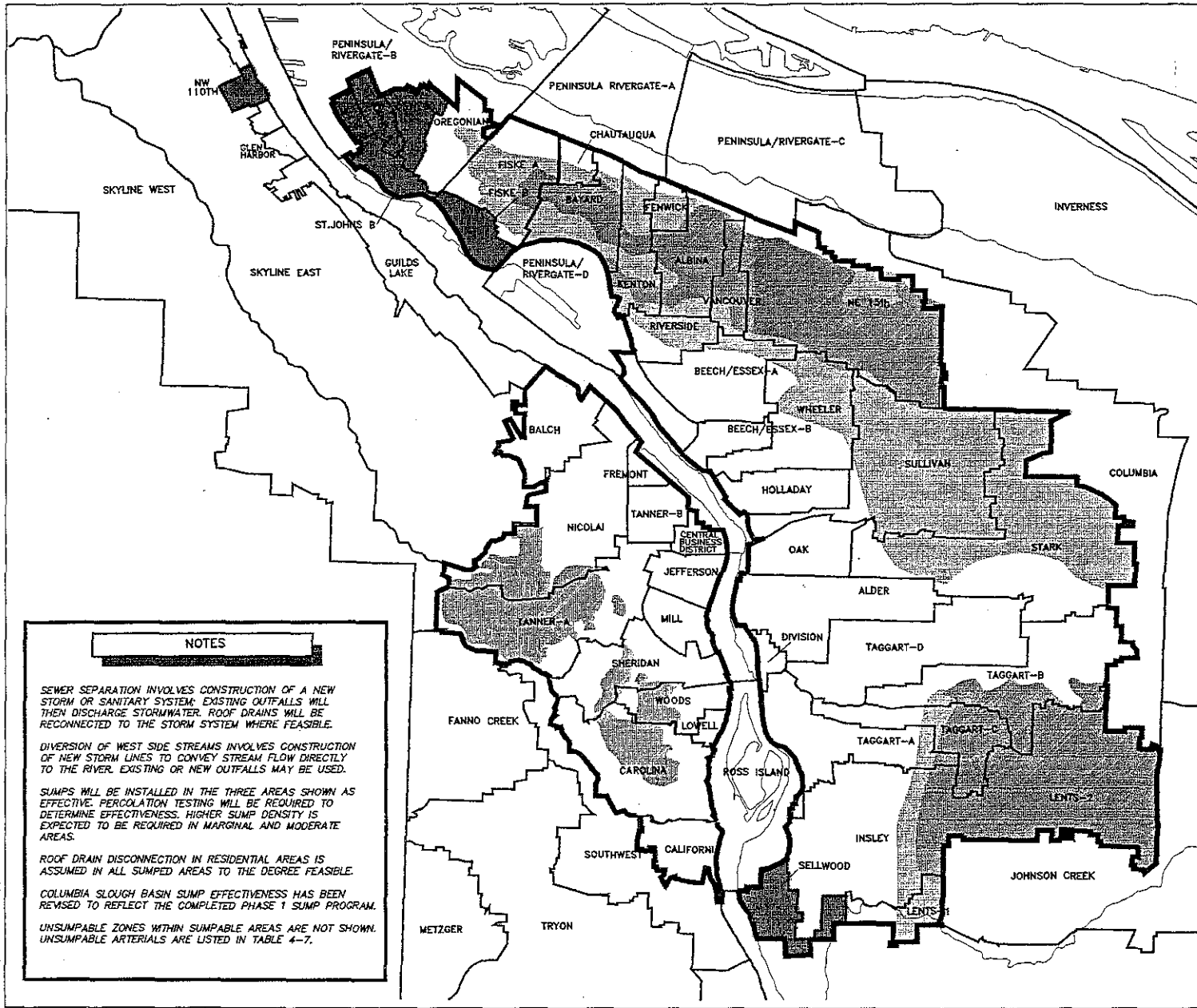
For purposes of this planning effort, the Willamette River WWTF is assumed to be located at the Swan Island site near the Riverside basin. It will be sized for a treatment rate of

340 mgd. For planning purposes, the facility will include screening, sedimentation, chlorination, dechlorination, and odor control processes for CSO treatment. Specific treatment technologies will be evaluated during predesign, including alternative means of disinfection. The facility would be planned and built in three stages: (1) site acquisition and permitting, to be done in 1994 through 1996; (2) Phase 1 construction to treat flows from the west side pumped across the river by the Balch pump station, to be completed by 2006; and (3) Phase 2 construction to treat flows from the east side lifted by the WWTF's influent pump station, to be completed by 2011. The estimated cost of the WWTF is \$111 million, including land costs, permitting, and both phases of construction. While screening may be included at the pump stations, the cost has been included in the estimated costs for the WWTF.

As the siting process of the WWTF progresses, an alternate location may be selected. This may require resizing certain elements.

Treatment Facility Effluent Outfall

The outfall for conveying effluent from the WWTF to the Willamette River would be about 144 inches in diameter and would extend an estimated 2,000 feet to the point of discharge. The length of the outfall may vary if an alternate location is selected. The estimated capital cost of the treatment facility effluent outfall and modifications to existing CSO outfalls is \$21 million. The cost reflects the potential need to construct a dedicated effluent outfall and to modify active CSO outfalls to minimize water quality impact.



LEGEND

- SEWER SEPARATION
- STREAM DIVERSION

INFILTRATION SUMP EFFECTIVENESS

- MARGINAL
- MODERATE
- HIGH

- COMBINED SEWER AREAS

0 2 MILES

NOTES

SEWER SEPARATION INVOLVES CONSTRUCTION OF A NEW STORM OR SANITARY SYSTEM. EXISTING OUTFALLS WILL THEN DISCHARGE STORMWATER. ROOF DRAINS WILL BE RECONNECTED TO THE STORM SYSTEM WHERE FEASIBLE.

DIVERSION OF WEST SIDE STREAMS INVOLVES CONSTRUCTION OF NEW STORM LINES TO CONVEY STREAM FLOW DIRECTLY TO THE RIVER. EXISTING OR NEW OUTFALLS MAY BE USED.

SUMPS WILL BE INSTALLED IN THE THREE AREAS SHOWN AS EFFECTIVE. PERCOLATION TESTING WILL BE REQUIRED TO DETERMINE EFFECTIVENESS. HIGHER SUMP DENSITY IS EXPECTED TO BE REQUIRED IN MARGINAL AND MODERATE AREAS.

ROOF DRAIN DISCONNECTION IN RESIDENTIAL AREAS IS ASSUMED IN ALL SUMPED AREAS TO THE DEGREE FEASIBLE.

COLUMBIA SLOUGH BASIN SUMP EFFECTIVENESS HAS BEEN REVISED TO REFLECT THE COMPLETED PHASE 1 SUMP PROGRAM.

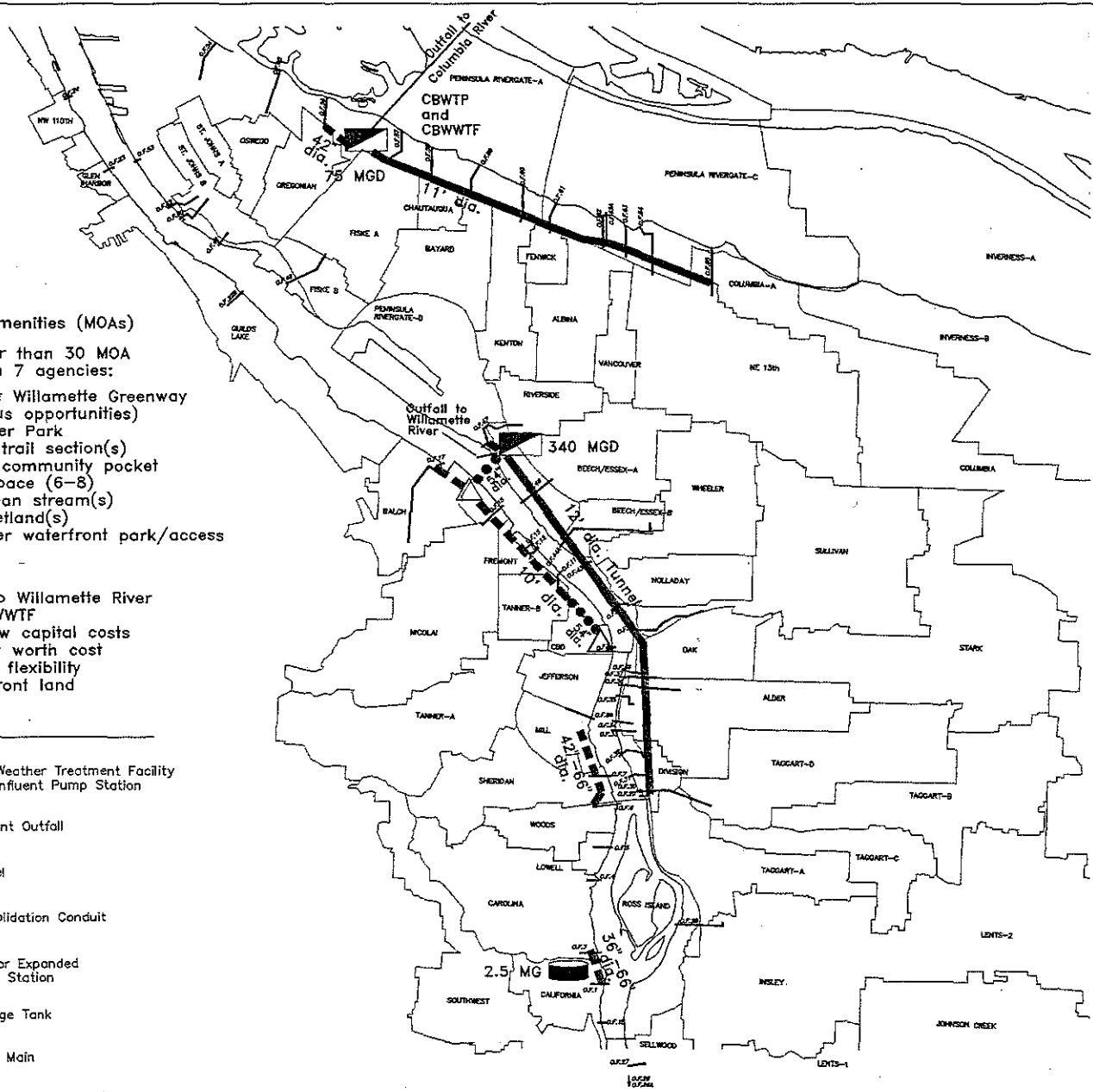
UNSUMPABLE ZONES WITHIN SUMPABLE AREAS ARE NOT SHOWN. UNSUMPABLE ARTERIALS ARE LISTED IN TABLE 4-7.

Bureau of Environmental Services
CSO MANAGEMENT PLAN

Location of Recommended Cornerstone Projects



FIGURE
3-1



- Multi-Objective Amenities (MOAs)**
 Potentially greater than 30 MOA opportunities with 7 agencies:
- West and East Willamette Greenway Trail (numerous opportunities)
 - East Bank River Park
 - 40-mile loop trail section(s)
 - Neighborhood community pocket parks/open space (6-8)
 - Daylighted urban stream(s)
 - Stormwater wetland(s)
 - Willamette River waterfront park/access

- Issues:**
- Treated CSO to Willamette River
 - Siting single WWTF
 - Comparably low capital costs
 - Lowest present worth cost
 - Highest future flexibility
 - Use of waterfront land

LEGEND

- Wet Weather Treatment Facility and Influent Pump Station
- Effluent Outfall
- Tunnel
- Consolidation Conduit
- New or Expanded Pump Station
- Storage Tank
- Force Main

SUMMARY OF FACILITIES

STORAGE TANKS

LOCATION	CAPACITY (MG)	PUMPING CAPACITY (MGD)
California	2.5	6.5
TOTAL	2.5	6.5

TREATMENT FACILITIES

LOCATION	TREATMENT CAPACITY (MGD)	PUMPING CAPACITY (MGD)
Riverside CBWWTF	340	340(a)
75	75	
TOTAL	415	415

INDEPENDENT PUMP STATIONS

LOCATION	CAPACITY (MGD)
CBD (Ankeny PS Upgrade)	56
Balch	130
TOTAL	186

(a) Includes 130 mgd from Balch pump station and 210 mgd from Riverside influent pump station.

NOTE: SIZING OF UNITS ASSUMES CORNERSTONE INFLOW REDUCTION PROJECTS ARE IN PLACE



Bureau of Environmental Services
 CSO MANAGEMENT PLAN

Recommended Configuration for Amended SFO Level of Control Single Willamette WWTF



FIGURE
 4 - 2

Phasing of Control Activities

The implementation of the recommended Columbia Slough and Willamette River CSO control elements should be as follows:

- Determine viability of and acquire site for Willamette River WWTF
- Construct Cornerstone Projects in multiple phases

- Design and construct Columbia Slough elements
- Design and construct west side elements concurrent with east side Cornerstone Projects and Phase 1 of Willamette River WWTF
- Review east side Cornerstone Projects success prior to predesign of east side elements
- Design and construct east side elements, including Phase 2 of Willamette River WWTF

Siting a new Willamette River WWTF will be key to successfully achieving the goals of the CSO program. It will require extensive involvement of the public, neighborhood groups, city and state agencies, and the environmental community. This process has begun and should be completed in mid- to late 1995. The preliminary engineering for the Willamette River WWTF cannot begin until the treatment plant site has been established. If a viable site cannot be obtained, the recommended alternative configuration would be the Columbia Boulevard WWTF. In this option, the Columbia Boulevard WWTF would treat all CSOs captured within the service area.

Rapid implementation of Columbia Slough Cornerstone Projects has begun. This will enable the design and implementation of the required storage/treatment units during Phase 1a (year 2000 elements).

Four Willamette River outfalls have been controlled since the SFO was issued. Mill (Outfall 8), Mill/Jefferson (Outfall 8A), and Glen Harbor (Outfall 23) have been controlled. The Guilds Lake pump station overflow (Outfall 22B) required no modifications to comply with the AFSO.

Implementation of one west side stream diversion Cornerstone Project, Tanner Creek, has begun. Construction of remaining Willamette River sewer separations are included in Phase 1b (year 2001 elements). Predesign of remaining Willamette River stream diversions will be completed in Phase 1b (year 2001 elements) to allow the proper sizing of the west side consolidation conduit, storage tank, pump stations, and force mains, to be designed and constructed during Phase 2 (year 2006 elements). Also, as part of Phase 2, west side tunnels and pump stations and the first phase of the Willamette River WWTF will be constructed to treat the flows generated by the west side basins. Construction of some elements of the Willamette River WWTF before Phase 2 may be desirable.

The design and construction of east side sewer separation Cornerstone Projects will be completed during Phase 1b. Remaining east side Cornerstone Projects, sumps, and roof drain disconnection, will be completed during Phase 2.

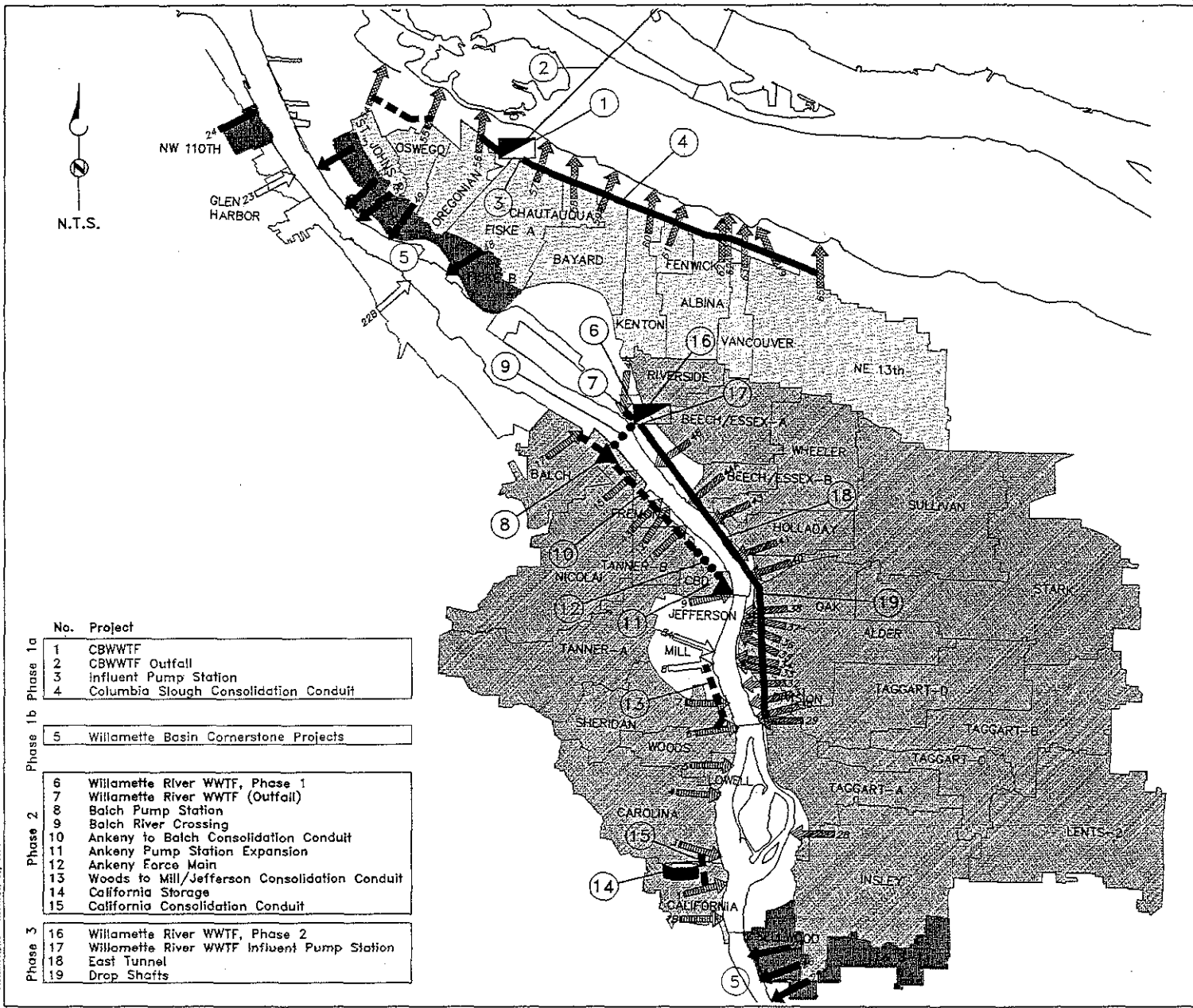
The design and construction of east side storage/treatment elements, including the second phase of the Willamette River WWTF, will be constructed in Phase 3 (year 2011 elements).

The recommended schedule of improvements and phasing of expenditures for a 20-year implementation schedule was evaluated for the recommended alternative and was based on the ASFO key milestone dates for the elimination of outfall discharge violations. Table 4-3 presents the schedule for completion of the individual Cornerstone Projects included in this document as a requirement of the ASFO. Table 4-4 lists all 56 outfalls that were active in 1991 and the proposed timing and method of their control. Figure 4-5 displays the recommended implementation schedule, and Figure 4-6 shows the phasing of control of the combined sewer outfalls.

Table 4-3 Scheduled Year of Cornerstone Project Completion	
Cornerstone Project	Scheduled Year of Completion
Prior to 1995:	
Glen Harbor diversion structure modification	1992
Mill sewer separation	1992
Mill/Jefferson sewer separation	1993
Phase 1a: Columbia Slough Basin Projects	
Sump construction	1996
Roof drain disconnection	2000
St. Johns A sewer separation	2000
Oswego sewer separation	2000
Ramsey lake wetlands stormwater pollution reduction facility	2000
Phase 1b: Willamette River Basin Cornerstone Projects	
Sump construction	2001
St. Johns B sewer separation/stormwater pollution reduction facility	2001
Fiske B sewer separation	2001
Sellwood/Lents 1 sewer separation	2001
N.W. 110th outfall control	2001
Tanner Creek/Nicolai stream diversion	2001
Phase 2: Willamette River Basin Cornerstone Projects	
Roof drain disconnection	2006
Balch partial separation	2006
Carolina stream diversion	2006
Woods/Sheridan stream diversion	2006

Table 4-4 Proposed Outfall Control Schedule by Combined Sewer Basin ^a			
Scheduled Phase and Year of Completion	Conversion to Stormwater-Only Outfall	Outfall Controlled to Meet ASFO ^b	Method of Control
Prior to 1995: Willamette River Basins (4/4)^c			
Mill	8		Separation
Mill/Jefferson	8A		Separation
Guilds Lake PS		22B	No modifications necessary
Glen Harbor		23	Sealed outfall
Phase 1a (2000): Columbia Slough Basins (13/17)			
St. Johns A	54		Separation
Oswego	55		Separation
Oregonian		56 ^d	Sumps/roof drain disconnection/consolidation conduit
Fiske A		57	Sumps/roof drain disconnection/consolidation conduit
Chautauqua		58	Sumps/roof drain disconnection/consolidation conduit
Bayard		59	Sumps/roof drain disconnection/consolidation conduit
Kenton		60	Sumps/roof drain disconnection/consolidation conduit
Fenwick		61	Sumps/roof drain disconnection/consolidation conduit
Albina		62,62A	Sumps/roof drain disconnection/consolidation conduit
Vancouver		63	Sumps/roof drain disconnection/consolidation conduit
N.E. 13th		64,65	Sumps/roof drain disconnection/consolidation conduit
Phase 1b (2001): Willamette River Basins (9/26)			
N.W. 110th		24 ^d	Partial separation/pump station improvements
Sellwood/Lents 1	26,26A,27		Sumps/roof drain disconnection/separation
Fiske B	48		Separation
St. Johns B	49,50,52,53		Separation
Phase 2 (2006): Willamette River Basins (13/39)			
California		1,1B	Storage tank/consolidation conduit
Carolina		3,4	Storage tank/consolidation conduit
Lowell		5	Consolidation conduit
Woods		6	Stream diversion/consolidation conduit
Sheridan		7	Stream diversion/consolidation conduit
CBD/Ankeny PS		9	Consolidation conduit/pump station expansion (or new pump station)
Tanner		11	Stream diversion/consolidation conduit
Fremont		12,13	Consolidation conduit
Nicolai		15	Stream diversion/consolidation conduit
Balch	17		Partial separation/consolidation conduit
Phase 3 (2011): Willamette River Basins (17/56)			
Insley		28	Sumps/roof drain disconnection/consolidation conduit
Division		29,31,32	Sumps/roof drain disconnection/consolidation conduit/sealed outfall
Taggart		30	Sumps/roof drain disconnection/consolidation conduit
Alder		33,34,35,36	Sumps/roof drain disconnection/consolidation conduit
Stark		37	Sumps/roof drain disconnection/consolidation conduit
Oak		38	Sumps/roof drain disconnection/consolidation conduit
Sullivan/Sullivan PS		40	Sumps/roof drain disconnection/consolidation conduit
Holladay		41	Sumps/roof drain disconnection/consolidation conduit
Wheeler		43	Sumps/roof drain disconnection/consolidation conduit
Beech-Essex		44A,46	Sumps/roof drain disconnection/consolidation conduit
Riverside		47	Sumps/roof drain disconnection/consolidation conduit
^a Total of 56 active outfalls in August 1991 (date of original SFO). See Figure 4-6 for location. ^b Separate stormwater may still be discharged through these controlled outfalls. ^c Number of outfalls controlled shown in parentheses (phase subtotal and program cumulative total). ^d This basin may be separated rather than controlled.			

A-19



LEGEND

- Wet Weather Treatment Facility (WWTF)
- Tunnel
- Consolidation Conduit
- Pump Station
- Storage Tank
- Force Main

Outfall Water Quality Violation Elimination

- 23' Prior to 1995
- 65' Phase 1a (2000)
- 53' Phase 1b (2001)
- 17' Phase 2 (2006)
- 46' Phase 3 (2011)

Cornerstone Projects Implementation

- Phase 1a
- Phase 1b
- Phase 2

Bureau of Environmental Services
CSO MANAGEMENT PLAN

Plan of Construction Phasing and Outfall Control for ASFO Level of Control Single Willamette WWTF

FIGURE 4-6

No.	Project
Phase 1a	
1	CBWWTF
2	CBWWTF Outfall
3	Influent Pump Station
4	Columbia Slough Consolidation Conduit
Phase 1b	
5	Willamette Basin Cornerstone Projects
Phase 2	
6	Willamette River WWTF, Phase 1
7	Willamette River WWTF (Outfall)
8	Balch Pump Station
9	Balch River Crossing
10	Ankeny to Balch Consolidation Conduit
11	Ankeny Pump Station Expansion
12	Ankeny Force Main
13	Woods to Mill/Jefferson Consolidation Conduit
14	California Storage
15	California Consolidation Conduit
Phase 3	
16	Willamette River WWTF, Phase 2
17	Willamette River WWTF Influent Pump Station
18	East Tunnel
19	Drop Shafts

PLANING.DWG November 20, 1994

Sump Management Plan

Policy

This program element will establish the policy governing the installation of stormwater infiltration sumps within the CSO area by the City of Portland, Bureau of Environmental Services. The current policy is as follows:

- Sump systems will only be constructed on residential streets. Sumps will not be installed in arterial streets or industrial areas. Arterial streets include major city traffic streets, district collector streets per the City of Portland's *Comprehensive Plan, Transportation Element* (PDOT, October 1992). Residential streets will be further screened to exclude high traffic volume streets.
- Some commercial sites (e.g., gas stations/fuel oil type businesses, plating shops, dry-cleaning facilities) may cause on-site contamination of groundwater. Although the risk of contamination of the groundwater from sumps in the public right-of-way from such on-site uses is small, there is some additional risk of accidents/spills occurring during transit to such sites. Sumps will not be constructed in these situations pending further risk analysis.
- Other types of commercial sites may include businesses (e.g., "Mom & Pop" type shops, small office buildings) that may have little potential impact to the groundwater. Sumps will be constructed in these situations provided they are along non-arterial streets.

The above policy will be modified as necessary based on results of future monitoring and risk analyses.

Design and Construction

The design and construction element will provide design criteria, standard drawings, and construction specifications. Current City standards will be incorporated into the management plan. These standards call for installation of a sedimentation manhole upstream of the infiltration sump for all new construction. The sedimentation manhole consists of a 4-foot diameter precast concrete manhole typically 10 feet in depth with an inverted outlet pipe installed to trap floating material. Typically, the sedimentation manhole provides a 6-foot depth of sediment storage. The infiltration sump consists of a 4-foot diameter precast concrete manhole with perforations to allow subsurface infiltration of stormwater. The depths of the infiltration sumps vary from 10 to 30 feet, with most infiltration sumps 30 feet deep.

Design standards will be periodically reviewed together with results of future monitoring and risk analyses, field maintenance experience, and the development of new technologies in stormwater treatment. Design standards will be modified when appropriate.

Maintenance

It is recognized that regular maintenance of the sedimentation manholes and infiltrations sumps is required to maintain the hydraulic capacity of the sumps and to reduce the potential to affect groundwater quality.

Effective management of maintenance activities requires adequate record keeping. This has been identified as a problem in the past. To address this, all sedimentation manholes and infiltration sumps installed as part of the CSO project will be entered into the City's Wastewater Collection Maintenance System (WCMS) database. The database will store system information (location, depth, etc.) and track maintenance activities.

The City is currently completing the development of a Maintenance Management Manual for Surface Stormwater Facilities (Brown and Caldwell, 1994). The manual includes recommended maintenance management practices for both sedimentation manholes and infiltration sumps that will be incorporated into the sump management plan. The recommended practices rely on a combination of periodic field inspections and cleaning operations. Cleaning of the sedimentation manholes will be done on a 4-year cycle with more frequent field inspections. The infiltration sumps will be cleaned when field inspections indicate the need.

The maintenance practices will be periodically reviewed and modified if necessary based on the tracking of actual field inspections and cleaning operations. Funds for the maintenance activities described above have been included in current BES budgeting.

Public Education

The public education element's goal is to raise public awareness related to groundwater issues and reduce the potential of sump discharges to affect groundwater quality due to improper practices such as illicit dumping.

Initial public education efforts include revising door hangers used during sump construction to include information on how citizens can help protect groundwater. Other actions being explored are the preparation of a mailer targeted specifically to newly sumped areas and stenciling of catch basin inlets in sumped areas to warn against illicit dumping.

The public education program will be included within the CSO Public Involvement Plan.

It will also be coordinated with public education efforts in other BES programs such as the NPDES Stormwater Program and the Clean Rivers Program.

Interagency Workgroup

An interagency workgroup has been formed to address issues related to surface and groundwater interactions. The workgroup is being jointly chaired by the City of Portland's Bureau of Environmental Services and Bureau of Water Works. Other participants to date include the Oregon Department of Environmental Quality and other City bureaus including the Bureau of Maintenance and Bureau of Transportation.

The interagency work group provides a forum for coordinating efforts between the various agencies. Initial work was focused on identifying current groundwater issues and developing a prioritized plan to address them. Infiltration sump issues were determined to be the highest priority. Initial tasks have concentrated on reviewing the contaminants of concern and identifying future monitoring needs. These efforts are being coordinated with development of the sump management plan.

Spill Response

Hazardous material spills have been identified as a potential risk to groundwater quality in areas using infiltration sumps for stormwater disposal (Golder, 1993). To minimize these risks a spill response plan will be prepared under the direction of BES.

Development of the plan will include addressing the following issues:

- Further identification and definition of the risks
- Reviewing current response strategies and responsibilities
- Reviewing legal issues
- Developing a spill response plan
- Providing necessary training

The plan will also address coordination between the various agencies responsible for spill responses. After the spill response plan is implemented, it will be periodically reviewed for performance and modified as necessary.

Well Monitoring Network

The establishment of a well monitoring network and sampling program has been identified as one method to study long term trends in groundwater quality and to help evaluate impacts to groundwater quality resulting from the use of sumps. This was

recommended by both the Golder Drainage Sump Study and DEQ review comments on the draft CSO facilities plan.

The development of a long term monitoring plan will be accomplished by BES through a professional consulting contract. Work scope development for this project has been initiated. The work scope is envisioned to include the following tasks:

- Designing a monitoring well network. This will include utilization of a 20-well network currently being installed by the United States Geological Survey (USGS) in the CSO area and other existing wells.
- Construction of a limited number of additional monitoring wells to supplement the USGS network. Currently this is estimated at 2 to 3 new wells.
- Determining the groundwater flow directions for the well network.
- Developing a sampling plan and conducting initial groundwater quality sampling. It is anticipated that initial sampling will be done on quarterly basis at a minimum to establish initial background conditions.

It is estimated that the above project will take 12 months and cost between \$150,000 and \$200,000. Funds for this project have been included in BES's proposed CIP budget. Long term monitoring will then be required for a minimum of 5 to 10 years to evaluate trends and will be done under the direction of BES.

Stormwater Sampling

Additional stormwater sampling has been recommended to reduce the uncertainty in the current risk assessments of potential groundwater impacts. Development of a sampling plan has been initiated with a review of the contaminants of concern. Further characterization of total petroleum hydrocarbons (TPH) as recommended by both the Golder Drainage Sump Study and DEQ review comments on the draft CSO facilities plan will be included in the plan. The sampling plan will be closely coordinated with both the City's ongoing extensive NPDES stormwater monitoring program and the well monitoring network being developed as part of the sump management plan.

References

Brown and Caldwell. *Maintenance Management Manual for Surface Stormwater Facilities: Volume I—Maintenance Management Plan*. Prepared for the City of Portland, Bureau of Environmental Services. June 1994.

Golder Associates. *Drainage Sump Study*. Prepared for the City of Portland, Bureau of Environmental Services. June 1993.

City of Portland, Office of Transportation (PDOT). *Comprehensive Plan, Transportation Element*. October 23, 1992.

ATTACHMENT C

State of Oregon
Department of Environmental Quality

Memorandum

Date: March 29, 1995

To: Environmental Quality Commission

From: Richard J. Santner, Northwest Region

Subject: Hearing Report:
Public Hearing and Written Comment Period for Receipt of Public Input
Pertaining to Commission Consideration of City of Portland's Combined
Sewer Overflow Final Facilities Plan.

The above cited Public Hearing was held on January 31, 1995, at 8:00 PM at the Department's Northwest Region Office in Portland. Immediately prior to the Hearing, an informal Question and Answer session was held at 7:00 PM. Written comments were received until February 6, 1995. Two people made statements at the Hearing. One written comment was received. The Hearing sign-in sheet and the written comment are attached.

Below are summaries or paraphrases of the significant statements made and the Department's responses.

Comment: The people who live in the "east-county" area that has recently been annexed to the City, and where the "Mid-County Sewer Project" has been built, have separated sewers; storm water there is discharged to dry wells. These people do not contribute to the CSO problem and should not be required to help pay for the solution.

Response: The Department acknowledges this comment. However, the Commission and Department do not have regulatory authority to require the City to structure its sewer use rates in any particular way to pay for the CSO control facilities.

The City has determined that all users of the sewer system will participate in the costs of the CSO control facilities, recognizing that a low-income assistance program should be established to enhance the affordability for low-income customers. The Final Facilities Plan and attendant Financial Plan document the process and rationale leading to this policy decision.

Comment: It would be desirable that the combined sewage treated at the future Columbia Boulevard wet weather treatment facility (WWTF) be provided at least some secondary treatment so as to reduce the load to the Columbia River.

Response: The EPA CSO Control Policy does not require that combined sewer overflows receive secondary treatment. The WWTF that will be located at the Columbia Treatment Plant site will provide primary treatment to the "captured" CSOs from the Columbia Slough sewer basins, prior to discharge to the Columbia River.

The principal consequence of providing secondary treatment as well to the CSOs would be to reduce the quantity of BOD discharged to the Columbia River, thereby reducing the impact of the discharge on the dissolved oxygen (DO) level in the river

However, because of the great dilution available in the Columbia River, it is not anticipated that the WWTF discharge would cause DO standards violations outside of a mixing zone. Nevertheless, as part of the process of developing NPDES permit provisions for the WWTF, the DO impact of the discharge will be evaluated. Any projected problems would most likely be dealt with through configuration and location of the outfall diffuser.

Comment: "The Final Plan fails to address all of the issues related to the ultimate purpose of this project: remediation of the impacts of the City's sewage and stormwater collection and treatment system on water quality of the Columbia Slough, Willamette River and the Columbia River.....the City fails to include evaluations of two of its significant discharge to these waters: stormwater and discharges from the Columbia Boulevard Wastewater Treatment Plant...."

Response: The Department certainly agrees that remediation of water quality problems from whatever source is the ultimate objective. However, the scope of study for the CSO Final Facilities Plan described in the 1991 Stipulation and Final Order was specifically directed at identifying feasible means of eliminating water quality problems that derive from the CSOs. There was no requirement that the Final Plan also identify steps to remedy problems that specifically derive from separate stormwater discharges or from the treated discharges from the Columbia Boulevard Plant. The Columbia Slough TMDL Program, facilities plans and permit evaluations for the Columbia Boulevard Plant upgrade, mixing zone studies, and NPDES stormwater and wastewater permits

will be the analytic and regulatory instruments for addressing these issues.

It should be noted that as part of the CSO facilities planning process, projections were made of the changes in discharge volumes and pollutant loadings to the three water bodies that will result from construction of the CSO control facilities. This information is presented in the Final Plan.

Comment: Attention must be paid to water quality parameters other than bacteria with respect to the treated discharges from the wet weather treatment facilities. Additionally, it should not be assumed that the appropriate way to deal with potential water quality standards violations for parameters other than bacteria from the remaining untreated CSO discharges is to modify the standards analogous to what will be done for bacteria.

Response: The Department agrees with these statements.

As noted above, and as discussed in the Staff Report, the Department and the City are now involved in a process to develop permit provisions for the WWTF at the Columbia Boulevard site. In this process, the potential water quality impact for all parameters will be examined. In several years, the process will be repeated for the Willamette WWTF. Analogously, the Department will expect the City to model the projected water quality impacts of the untreated discharges to the Willamette River once the number, size and location of the remaining outfalls has been determined.

Based on information presently available, aside from bacteria, the water quality parameters of greatest concern are probably floatables and solids, and toxic metals. The WWTFs can be expected to effectively remove floatables and solids. There are potential structural means for reducing these pollutants at the untreated outfalls as well.

Toxic metals in suspension will be significantly removed from the effluent by sedimentation at the WWTFs. However, there is little in the way of treatment that will remove metals in solution. Appropriate outfall design can mitigate the toxic effect of the metals in the discharges, but actual reduction in dissolved metals can only be achieved by pollutant source control programs.

In summary, the Department remains concerned about all water quality parameters. Except for bacteria, the Department has not concluded that any other changes in standards are appropriate.



1-31-95
@ DEQ: NWR
7:00 PM

SIGN-IN SHEET

PDX:CSO: Final Facilities Plan
Public Hearing

PLEASE PRINT

NAME	ADDRESS	CITY, STATE, & ZIP
1. Robert F SNEPPERD	12730 NE Rose PKY	PORT OR 97230
2. CLAUDIA ZAHORCAK	20600 SW SHOSHONE	TUALATIN OR 97062
3. Lester Lee	1120 SW 5 th Av, Rm 400	Portland, OR 97204
4. Gordon Nicholson	13106 NW GERMAINTOWN RD	PDX 97231
5. John Long	1120 SW 5 th Rm 400	PDX 97204
6. Alan Arant	1211 SW 5 th Ave, 8th Floor	Portland, OR 97204
7. TOM PIERCE	10742 NW OLD COVENANT PASS	Portland OR 97231
8. Mary Lou	731 SW Selman #407	Portland OR 97205
9. Neil Mullaney	DEQ	
10. Linc Mann	BES	
11. Richard Sandner	DEQ	
12.		
13.		
14.		
15.		

5/91 signin.deq

Note: He did not sign-in, but I can attest that
Mickey Jones attended the meeting & gave
testimony P.J.S.

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

WITNESS REGISTRATION

NAME (Please print) Robert F SHEPPERD

ADDRESS 12730 NE ROSE PARKWAY

CITY PORTLAND STATE OR ZIP 97231

Check here if you wish to be added to the mailing list about this subject. Be sure your complete address is listed above.

5/91 witness.deq

2

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

WITNESS REGISTRATION

NAME (Please print) Wm Michael Jones

ADDRESS 2412 N Mississippi

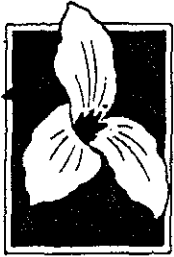
CITY Portland STATE OR ZIP 97227

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5/91 witness.deq

C-5

NORTHWEST ENVIRONMENTAL ADVOCATES



February 6, 1995

Richard Satner
Northwest Region
Department of Environmental Quality
2020 S.W. 4th
Portland, OR 97201

VIA FAX: 229-6945

Columbia/Willamette
River Watch
133 S.W. 2nd Ave. #302
Portland, OR 97204

Re: City of Portland
CSO Final Facilities Plan

Dear Richard:

Northwest Environmental Advocates appreciates the opportunity to comment on the City of Portland's Final Facilities Plan for the Portland CSO Program. While we are heartened to see that progress is being made in achieving environmental protection from the effects of combined sewer overflows (CSO), we continue to see many of the same problems going unresolved year after year, document after document.

Stormwater and Treated Sewage

The Final Plan fails to address all of the issues related to the ultimate purpose of this project: remediation of the impacts of the City's sewage and stormwater collection and treatment system on water quality of the Columbia Slough, Willamette River and the Columbia River. One reason for this is that the City fails to include evaluation of two of its significant discharges to these waters: stormwater and discharges from the Columbia Boulevard Wastewater Treatment Plant. Both of these discharges are not only related to the CSOs but are likely to be affected by the CSO project. Both of these discharges as well as discharges related to treated CSOs may well be restricted due to water quality limited listings. The City's resistance to looking at the whole picture will likely mean greater costs to be borne by the ratepayers and taxpayers and a longer period of time during which beneficial uses will be impaired. The City had to be dragged kicking and screaming to solve the CSO problem and clearly will avoid other problems to the extent it can. It is incumbent upon the Department to require the City to address these issues concurrently with the CSO program.

Parameters Other Than Bacteria

NWEA has consistently expressed concern about the nearly exclusive focus on bacteria as the pollutant of concern. We are pleased to see some attention given to the other parameters in the Final Plan but remain concerned about the level of attention that will be paid to these. We strongly

C-6

believe that if the Department allows the City to continue to ignore or downplay the problems associated with other parameters, the City will come back later and request waivers of all laws, regulations, standards and schedules pertaining to these parameters. While we understand that the appropriate level of treatment for the contained CSOs will occur in the permit stage, NWEA is concerned that a huge amount of money will be spent on containing the CSOs and relatively little in their treatment. We remain concerned about the effectiveness of both disinfection and load removal in the wet weather treatment process.

There are indications in the Final Plan that the City does not understand some of the water quality-based limitations that may be imposed in the future on the CSO project. For example, the City states that the Slough is water quality limited for nutrients and fecal coliform. This statement does not exhibit an understanding of the true status of water quality in the Slough nor all of the aspects of the 303(d)(1) process with regard to that waterbody. The 303(d)(1) listings for the Slough, as well as the Willamette and Columbia Rivers, have been expanded in the most recent draft of the 1994 list and will likely be expanded further in this process or as an outcome of litigation by NWEA against the U.S. Environmental Protection Agency (EPA). The ramifications of this for the City's discharges include restrictions under TMDL load allocations and the Department's own rules, for a multiplicity of parameters. The Department should also point out to the City that it should not rely overly on the "flexibility" of establishing mixing zones and how large they can be because a load allocation in a TMDL could override a mixing zone calculation.

In addition, while it is outside the purview of the CSO project, the Department should remind the City that significant other steps will be required to meet the Sloughs multi-parameter TMDL and the load reductions that should be associated with the on-going contaminated sediments remediation project. While we generally agree that other sources can pick up the loadings from the untreated CSOs left in the Slough, the Final Plan should discuss the ramifications of the TMDLs for remaining stormwater discharges. When the City does comment on stormwater, it is to place the CSOs in context. It remarks that in terms of discharges of metals to the Willamette, its untreated stormwater is worse than loadings from CSOs, treated or untreated. While this is irrelevant to the level of treatment needed for CSOs it does point out that the City should be considering the impacts of its stormwater on water quality.

The City states that metals loadings from CSOs are insignificant because they are estimated to be 7-10% of Willamette metal loadings. One tenth of loadings does not seem insignificant to NWEA. The City also states that the loadings from stormwater are 7-16%. The range given (with the high end twice the low end) suggests that the City does not have sufficient information upon which to base its conclusions. (It also indicates that the City is responsible for 14-26% of metals loadings in the Lower Willamette.) This is supported by the statements in the Final Plan that limited monitoring at the Morrison Bridge shows water concentrations of copper, lead and zinc not consistent with modelled expectations for the Lower Willamette based on expected loads from CSOs, stormwater and upstream sources.

Elsewhere the City reports that its studies are inconclusive as to the impact of untreated CSOs on other water quality parameters. This underscores the need, pointed out by NWEA over the past few years, for the Department to instruct the City on the level of monitoring and special studies that should be conducted. The City has repeatedly chosen to collect insufficient data and has a history of doing so on the Slough. The Department simply should not allow the City to continue to drag its feet in this regard.

The Department should instruct the City not to consider petitioning for changes in other water quality standards. The change in bacteria standard now proposed by the Policy Advisory Committee to the Department in the current triennial review of water quality standards is appropriate in part because excess levels of bacteria affect human contact recreation which is presumed to be an extremely rare use during large storm events. This rationale does not exist for a possible hydrologic waiver of other water quality standards such as metal and toxic materials. The uses protected by the criteria for other parameters are year round. Parameters which are persistent in the environment cause impacts to water quality and beneficial uses beyond a matter of hours or days. The Department must instruct the City that obtaining consistency with the Clean Water Act does not mean altering the regulations and standards but rather altering its performance to conform to the existing laws.

Treatment Alternatives

NWEA is pleased to see the City's interest in evaluating alternatives to chlorination/dechlorination for disinfection. We are also pleased to see a discussion of the potential for in-line storage in new pipes. We urge the Department to ensure that both of these alternatives are

given sufficient consideration.

Public Education and Involvement

The River Alert Program still suffers from the same problems that have plagued it from the beginning. While the City is to be commended for vastly improving the content, size, and readability of its signs posted at each outfall, the "River Alert" program remains irrelevant. The City has insisted on retaining the text -- "CSO, River Alert" -- on the yellow diamond warning signs. This is meaningless to most people who see it. The words should be changed to be something that at least the majority of people can understand and interpret rather than a small minority, e.g., "raw sewage." It appears from the listing provided at 7-2 that the City has increased its distribution of these signs but previously they were very poorly located. The City must be instructed to install the signs where people use the shores of these areas rather than just the boat ramps favored by the City. While we cannot comment on the actual location without an on-site inspection, it appears, for example, that the actual swimming area at Cathedral Park may remain unmarked.

The City continues to ignore some very easy ways to inform the public. For example, when sumps are being installed in neighborhoods, the neighborhood association newsletters could briefly describe the work and the scope of the problem (e.g. billions of gallons of raw sewage going into our rivers). Door hangers used in these areas of on-going work would also have a high likelihood of being read.

City outreach documents, with the exception of the May 1993 tabloid and the (highly confusing and misleading) "Issues and Choices" booklet, are overly simplistic and do not invite reading or feedback.

The City has received relatively little public involvement in this project considering the magnitude of the problem and the costs involved in its solution. From NWEA's experience it does seem that the public is less responsive to this issue than, for example, concerns about dioxin. To some degree this is attributable to the City's own attitude conveyed over years that the CSO are not a problem. To rectify this, the City need not engage in scare tactics but simply be honest about the hazards presented by raw sewage. Instead it remains caught between the desire to tell the public it has all of its problems under control and to encourage public interest in helping to solve problems.

The City's description of the Clean River Committee is misleading. Interestingly, the description is presented in both past and present tense as the Committee has to all

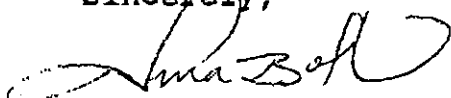
appearances ceased to exist at the same time as the City has told its members the Committee persists. NWEA's experience on this committee helps to explain why the City does not get an appropriate level of public involvement. A large number of participants felt that the process was simply to get the Committee to "rubberstamp" the City's findings rather than to do any substantive work. This was insulting and rendered the process of no value. The Plan states that a "broad-based citizens committee will be maintained." "Maintained" is not the same as "active." DEQ should require that the City have meaningful public input through its advisory committees.

The so-called "collaborative process" was not a collaborative process because it did not include all of the players. The Department should not agree to participate in such misnomers in the future. This process was also poorly done with high levels of technical information presented to a panel which could not understand it, few public in attendance and a pre-ordained outcome. This was a public show only there was no public to watch. The Department should instruct the City to spend its resources on public information and involvement carefully. To date a lot of money appears to have been spent on very questionable activities which have reached a tiny fraction of the public.

Overall, the City's efforts to involve the public generally fail because the City is not an open governmental entity which invites participation. The public finds that it is difficult to obtain information from the City, that the City is defensive and is just going through the paces. At the City Council meetings where the public is invited to attend, comment is very limited, the decisions have clearly already been made and public notice is highly inadequate. This is a very definite contrast with, for example, the DEQ advisory committees on which NWEA has served.

In conclusion, NWEA urges the Department to ensure the City's commitment to meeting water quality standards and protecting beneficial uses throughout the process of developing the final plans for the CSO project and associated discharges from city systems.

Sincerely,



Nina Bell
Executive Director

Environmental Quality Commission

- Rule Adoption Item
- Action Item
- Information Item

Agenda Item F
April 14, 1995 Meeting

Title:

Petition for Reconsideration of Limited Party Status/Appeal of Hearings Officer Decision in the Matter of Ross Bros. Construction, SWP-WR-94-274

Summary:

Petitioners are nearby land owners with interest in the outcome of a DEQ solid waste contested case. The Petitioners were granted limited party status by the Hearings Officer in this contested case. This is an appeal from the December 28, 1994, EQC Hearings Officer Order granting limited party status, without the right of cross examination, to the twelve intervenors. The intervenors are seeking "party status" with the ability to cross examine witnesses to the contested case proceeding.

Department Recommendation:

It is recommended that the Commission uphold the Hearings Officer's Order granting limited party status to the intervenors without the right of cross examination.

ED Druback
Report Author *64 TRB*

Tom Diepham
Division Administrator

Lyssia Taylor
Director

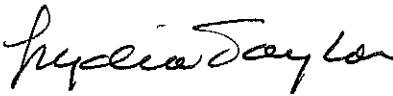
4/4/95

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

State of Oregon
Department of Environmental Quality

Memorandum[†]

Date: April 4, 1995

To: Environmental Quality Commission
From: Lydia Taylor, Interim Director 
Subject: Agenda Item F, April 14, 1995, EQC Meeting

Statement of the Issue

This is an appeal from the December 28, 1994, EQC Hearings Officer Order granting limited party status, without the right of cross examination, to twelve intervenors in a contested case proceeding. The intervenors are seeking "party status" with the ability to cross examine witnesses to the contested case proceeding.

Background

On October 13, 1994, the Department issued Notice of Violation, Department Order and Assessment of Civil Penalty No. SWP-WR-94-274 (Notice) to Ross Bros. & Company, Inc. (Ross) which is attached. The Notice alleged that Ross had established a solid waste disposal site (site) without a permit from the Department. The Notice assessed civil penalty of \$3,000 and ordered Ross to remove all solid waste from the site and perform sampling in areas the Department had reason to believe petroleum contaminated soil had been placed.

On November 2, 1994, Ross appealed the Notice and requested a contested case hearing (attached). Thereafter, twelve neighbors of the site petitioned to intervene in the contested case hearing and be granted party status. A hearing was held at which time the petitioners, Ross and the Department were heard. The Department did not object to granting party status, but requested the Hearings Officer to place some procedural requirements on petitioners due to the large number of petitioners with similar interests.

On December 28, 1994, the Hearings Officer issued an Order granting limited party status to the petitioners (attached). One of the procedural limitations was that the intervenors be allowed to testify but not cross examine witnesses. The Hearings Officer based this decision on findings that the petitioners did establish sufficient grounds to become limited parties under DEQ Administrative Rules, but that full participation by 11 petitioners could cause unnecessary delays in the hearings, and that the petitioners' lack of legal training warrants restricting their party status rights (see B-33 to B-35 attached).

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

Memo To: Environmental Quality Commission
Agenda Item F
April 14, 1995 Meeting
Page 2

Intervenors requested reconsideration which was denied and thereafter filed this appeal to the EQC.

Authority to Address the Issue

Appeals of Orders of the EQC's Hearings Officer are to the Commission pursuant to OAR 340-11-132(2).

Alternatives and Evaluation

The Commission may 1), uphold the Hearings Officers decision, 2) substitute the Hearings Officer's decision for a decision of the Commission on the record, or 3) decline to rule on this issue until a final order has been entered in the case.

Recommendation for Commission Action

It is recommended that the Commission uphold the Hearings Officer's Order granting limited party status to the intervenors without the right of cross examination.

Attachments

A copy of the contested case record has been attached for Commission review.

Reference Documents (available upon request)

1. Statutory Authority
2. Applicable Rule(s)
3. Supporting Technical References

Approved:

Section:

Van A. Follis

Division:

Sam Bispham

Report Prepared By: Ed Druback

Phone: 229-5151

Date Prepared: April 4, 1995

Contested Case Proceedings Generally

(ORS 183.413, 183.415)

340-11-098 Except as specifically provided in OAR 340-11-132, contested cases shall be governed by the Attorney General's Model Rules of Procedure, OAR 137-03-001 through 137-03-093. In general, a contested case proceeding is initiated when a decision of the Director or Department is appealed to the Commission. Therefore, as used in the Model Rules, the terms "agency", "governing body", and "decision maker" generally should be interpreted to mean "Commission". The term "agency" may also be interpreted to be Department where context requires.

ATTORNEY GENERAL'S MODEL RULES

Contested Case Notice

137-03-001 (1) In addition to the requirements of ORS 183.415(2), a contested case notice may include a statement that the record of the proceeding to date, including information in the agency file or files on the subject of the contested case, automatically become part of the contested case record upon default for the purpose of proving a prima facie case.

(2) Except as otherwise required by law, the contested case notice shall include a statement that if a request for hearing is not received by the agency within 21 days of the date of mailing or other service of the notice, the person shall have waived the right to a hearing under ORS chapter 183, except as provided in OAR 137-03-075(6) and (7).

(ORS 183.415; 183.450)

Rights of Parties in Contested Cases

137-03-002 (1) In addition to the information required to be given under ORS 183.413(2) and ORS 183.415(7), before commencement of a contested case hearing, the agency shall inform a party, if the party is an agency, corporation, or an unincorporated association, that such party must be represented by an attorney licensed in Oregon, unless statutes applicable to the contested case proceeding specifically provide otherwise.

(2) Except as otherwise required by ORS 183.415(7), the information referred to in section (1) of this rule may be given in writing or orally before the commencement of the hearing.

(3) Unless precluded by law, informal disposition may be made of any contested case by stipulation, agreed settlement, consent order, or default. Informal settlement may be made in license revocation proceedings by written agreement of the parties and the agency consenting to a suspension, fine, or other form of intermediate sanction.

(4) Unless precluded by law, informal disposition includes, upon agreement between the agency and the parties, but is not limited to, a modified contested case proceeding, nonrecord abbreviated hearing, nonbinding arbitration, and mediation, but does not include binding arbitration.

Request by Person to Participate as Party or Limited Party

137-03-005 (1) When an agency gives notice that it intends to hold a contested case hearing, persons who have an interest in the outcome of the agency's proceeding or who represent a public interest in such result may request to participate as parties or limited parties.

(2) A person requesting to participate as a party or a limited party, shall file a petition with sufficient copies for service on all parties, with the agency at least 21 days before the date set for hearing. Petitions untimely filed shall not be considered unless the agency determines that good cause has been shown for failure to file timely.

(3) The petition shall include the following:

(a) Names and addresses of the petitioner and of any organization the petitioner represents;

(b) Name and address of the petitioner's attorney, if any;

(c) A statement of whether the request is for participation as a party or a limited party, and, if as a limited party, the precise area or areas in which participation is sought.

(d) If the petitioner seeks to protect a personal interest in the outcome of the agency's proceeding, a detailed statement of the petitioner's interest, economic or otherwise, and how such interest may be affected by the results of the proceeding.

(e) If the petitioner seeks to represent a public interest in the results of the proceeding, a detailed statement of such public interest, the manner in which such public interest will be affected by the results of the proceeding, and the petitioner's qualifications to represent such public interest.

(f) A statement of the reasons why existing parties to the proceeding cannot adequately represent the interests identified in subsections (3)(d) or (e) of this rule.

(4) The agency shall serve a copy of the petition on each party personally or by mail. Each party shall have seven days from the date of personal service or agency mailing to file a response to the petition.

(5) If the agency determines that good cause has been shown for failure to file a timely petition, the agency at its discretion may:

(a) Shorten the time within which answers to the petition shall be filed; or

(b) Postpone the hearing until disposition is made of the petition.

(6) If a person is granted participation as a party or a limited party, the agency may postpone or continue the hearing to a later date when it appears that commencing or continuing the hearing would jeopardize or unduly burden one or more of the parties in the case.

Oregon Administrative Rules -- DEQ Version
CHAPTER 340, DIVISION 11 - DEPARTMENT OF ENVIRONMENTAL QUALITY

- (7) In ruling on petitions to participate as a party or a limited party, the agency shall consider:
- (a) Whether the petitioner has demonstrated a personal or public interest that could reasonably be affected by the outcome of the proceeding;
 - (b) Whether any such affected interest is within the scope of the agency's jurisdiction and within the scope of the notice of contested case hearing;
 - (c) When a public interest is alleged, the qualifications of the petitioner to represent that interest;
 - (d) The extent to which the petitioner's interest will be represented by existing parties.
- (8) A petition to participate as a party may be treated as a petition to participate as a limited party.
- (9) The agency has discretion to grant petitions for persons to participate as a party or a limited party. The agency shall specify areas of participation and procedural limitations as it deems appropriate.
- (10) An agency ruling on a petition to participate as a party or as a limited party shall be by written order and served promptly on the petitioner and all parties. If the petition is allowed, the agency shall also serve petitioner with the notice of rights required by ORS 183.413(2).

(ORS 183.310; 183.413)

Request by Agency to Participate as a Party or an Interested Agency

- 137-03-007 (1) When an agency gives notice that it intends to hold a contested case hearing, it may name any other agency that has an interest in the outcome of that proceeding as a party or as an interested agency, either on its own initiative or upon request by that other agency.
- (2) An agency named as a party or as an interested agency has the same procedural rights and shall be given the same notices, including notice of rights, as any party in the proceeding.
- (3) An agency may not be named as a party under this rule without written authorization of the Attorney General.

(ORS 180.060; 183.310; 183.413)

Non-Attorney Representation

340-11-102 Pursuant to the provisions of Section 3 of Chapter 833, Oregon Laws 1987, and the Attorney General's Model Rule OAR 137-03-008, a person may be represented by an attorney or by an authorized representative in a contested case proceeding before the Commission or Department.

ATTORNEY GENERAL'S MODEL RULE

Persons Represented by Authorized Representative in Statutorily Designated Agencies

137-03-008 (1) For purposes of this rule, the following words and phrases have the following meaning:

(a) "Agency" means: State Landscape Contractors Board; Department of Energy and the Energy Facility Siting Council; Environmental Quality Commission and the Department of Environmental Quality; Insurance Division of the Department of Insurance and Finance for proceedings in which an insured appears pursuant to ORS 737.505; Fire Marshall Division of the Executive Department; Division of State Lands for proceedings regarding the issuance or denial of fill or removal permits under ORS 641.605 to 541.685; Public Utility Commission; Water Resources Commission and the Water Resources Department.

(b) "Authorized representative" means a member of a partnership, an authorized officer or regular employee of a corporation, association or organized group, or an authorized officer or employee of a governmental authority other than a state agency.

(c) "Legal argument" includes arguments on:

(A) The jurisdiction of the agency to hear the contested case.

(B) The constitutionality of a statute or rule or the application of a constitutional requirement to an agency.

(C) The application of court precedent to the facts of the particular contested case proceeding.

(d) "Legal argument" does not include presentation of evidence, examination and cross-examination of witnesses or presentation of factual arguments or arguments on:

(A) The application of facts to the statutes or rules directly applicable to the issues in the contested case.

(B) Comparison of prior actions of the agency in handling similar situations.

(C) The literal meaning of the statutes or rules directly applicable to the issues in the contested case.

(D) The admissibility of evidence or the correctness of procedures being followed.

(2) A party or limited party participating in a contested case hearing before an agency listed in subsection (1)(a) of this rule may be represented by an authorized representative as provided in this rule if the agency has by rule specified that authorized representatives may appear in the type of contested case hearing involved.

(3) On or before the first appearance by an authorized representative as defined in subsection (1)(b) of this rule, an

OCT 13 1994

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

CERTIFIED MAIL NO. P 003 419 067

Ross Bros. & Company, Inc.
Steven M. Ross, Registered Agent
3501 Brooklake Road N.
Salem, OR 97303

RECEIVED
MAR 22 1995

Re: Notice of Violation, Department
Order, and Assessment of Civil
No. SWP-WR-94-274
Marion County


Enclosed is a Notice of Violation, Department Order, and Assessment of Civil Penalty relating to the September 1994, inspections by the Department of Environmental Quality at the Ross Bros. & Company, Inc. facility near Keiser, Oregon. The Department Order and Civil Penalty Assessment are a result of solid waste management violations identified during the inspections. The violations included establishing, operating and maintaining a solid waste disposal site without a permit and failure to use the correct analytical method to determine if proper soil cleanup levels were achieved prior to transporting and disposing of petroleum contaminated soil at the facility.

Because you violated the Department's rules, you are liable for a civil penalty assessment. The civil penalty schedule provides for a penalty up to \$10,000 per day for each violation of these rules. In the enclosed Notice, I have assessed a civil penalty of \$3,000 for establishing, operating and maintaining a solid waste disposal site. In determining the amount of the penalty, I used the procedures set forth in Oregon Administrative Rule (OAR) 340-12-045. The Department's findings and civil penalty determination are attached to the Notice as Exhibit 1.

Appeal procedures are outlined within Section VI of the enclosed notice. If you fail to either pay or appeal the penalty within 21 days, a Default Order will be entered against you.

The Department expects your cooperation and full compliance with Oregon's environmental regulations at all times. We are prepared to assist you with questions regarding rule interpretation or the applicability of specific regulations to your facility.



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993
DEQ-1 

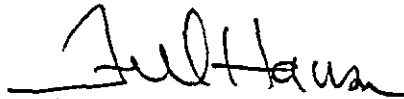
Attachment B-1

Please be informed that you are liable for additional civil penalties if you violate the Department Order or if you have additional violations of the Department's solid waste regulations.

If you wish to discuss this matter, or if you believe there are mitigating factors which the Department might not have considered in assessing the civil penalty, you may request an informal discussion by attaching your request to your appeal. Your request to discuss the matter with the Department will not waive your right to a contested case hearing.

If you have any questions about this action, please contact Ed Druback of the Department's Enforcement Section at 229-5151 or toll-free at 1-800-452-4011.

Sincerely,



Fred Hansen
Director

FH:ed

Enclosure(s)

cc: Western Region, Salem Office, DEQ
Western Region, Eugene Office, DEQ
Waste Management and Cleanup Division, DEQ
Environmental Quality Commission
Oregon Department of Justice
Dale W. Penn, Marion County District Attorney
U.S. Environmental Protection Agency
Robert A. Zielinski

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

IN THE MATTER OF)
ROSS BROS. & COMPANY, INC.,)
an Oregon corporation,) Respondent.)
NOTICE OF VIOLATION,
DEPARTMENT ORDER AND
ASSESSMENT OF CIVIL
PENALTY
NO. SWP-WR-94-274
MARION COUNTY

I. AUTHORITY

This Notice of Violation, Department Order and Assessment of Civil Penalty is issued by the Department of Environmental Quality (Department or DEQ) pursuant to Oregon Revised Statutes (ORS) ORS 459.376, ORS 466.190, ORS Chapter 183; and Oregon Administrative Rules (OAR) Chapter 340, Divisions 11 and 12.

II. FINDINGS

1. Ross Bros. & Company, Inc., an Oregon corporation (Respondent) is the contract purchaser of a parcel of land consisting of 19.97 acres identified as Tax Lot 500, Section 25, Township 6 South, Range 3 West of the Willamette Meridian in Marion County, Oregon (Borrow Pit site) also commonly referred to as Barnick Lake.

2. Respondent is a construction company that performs various construction related activities including, but not limited to: road work, soil and debris removal.

3. During September 1994, the Department, on numerous occasions, inspected the Borrow Pit site. These inspections have documented the disposal of solid waste at the Borrow Pit site by Respondent.

4. Respondent owns property located at 3501 Brooklake Road N. in Salem, Oregon (Brooklake Road site). As owner of this property, Respondent decommissioned underground storage tanks and reported a release to the Department (file number: LUST # 24-91-4040) and reported to the Department that approximately 500 cubic yards of petroleum contaminated soil (PCS) was excavated during initial remedial activities.

5. On February 22, 1994, Respondent submitted a report to the Department which included "truck tickets" documenting the removal of 180 cubic yards of PCS from the Brooklake Road site to the Borrow Pit site for disposition.

6. On March 10, 1994, Respondent, in response to a request from the Department, submitted a remediation report containing sample results from the PCS at the Brooklake Road site. The testing methodology used on the samples was inadequate and not in accordance with Department rules.

7. Respondent has provided services, including the removal of soil, for the Oregon Department of Transportation "D" Street I-5 overpass project in Salem, Oregon. The soil from this project has been deposited at the Borrow Pit site.

8. On September 16, 1994, the Department, after making visual and olfactory confirmation of the presence of petroleum, collected three soil samples from "D" Street overpass project soil that was stockpiled at the Borrow Pit site. Laboratory analysis of these three samples show the presence of Lube Oil range Total Petroleum Hydrocarbons (TPH) (at 66 mg/kg, 67 mg/kg and 150 mg/kg) with one sample producing positive TPH results for Diesel range contaminants.

9. From September 19, 1994 to September 23, 1994, the Oregon Department of Transportation collected soil samples at the "D" Street overpass project. Two of the three samples taken produced positive TPH results 153 mg/kg and 4295 mg/kg in the range of Lube Oil.

III. VIOLATIONS

Based upon the above noted findings, Respondent has violated the following provisions of Oregon's laws and rules as follows:

1. Respondent violated ORS 459.205 by establishing, operating and maintaining a solid waste disposal site at the location described in Section II, Paragraph 1 above, without having first received a permit from the Department. Specifically, Respondent has disposed of

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1 asphalt roofing material, demolition waste, unconsolidated asphalt, soil contaminated with fresh
2 asphalt, petroleum contaminated soil, discarded furniture, treated wood, discarded tires, brush
3 and other woody material and other plastic and metal waste at the Borrow Pit site.

4 2. Respondent violated OAR 340-122-335(3) and OAR 340-122-350(1) and (2) by
5 failing to use the correct analytical method to determine if the proper soil cleanup standards were
6 achieved prior to transporting and disposing of petroleum contaminated soils from the Brooklake
7 Road site at the Borrow Pit site.

8 IV. DEPARTMENT ORDER

9 Based upon the foregoing FINDINGS AND VIOLATIONS, Respondent is hereby
10 ORDERED TO:

11 1. Immediately initiate actions necessary to correct all of the above cited violations
12 and come into full compliance with Oregon's laws and rules.

13 2. Immediately cease disposing of solid waste at the Borrow Pit site.

14 3. Within fifteen (15) days of the date of this Order, remove all solid waste from the
15 site, including, but not limited to, that solid waste referred to in Section III, Paragraph 1 above.

16 4. Within thirty (30) days of the date of this Order, sample and characterize the soil
17 stored at the Borrow Pit site that originated at the "D" Street overpass project. Once
18 characterized, remove all petroleum contaminated soils not within levels approved by the
19 Department, to a Department approved facility.

20 5. Within thirty (30) days of the date of this Order, submit to the Department:

21 (a) Documentation that resolves the discrepancy between the amount of
22 petroleum contaminated soil reported as being excavated from the Brooklake Road site and what
23 was reported to have been transported to the Borrow Pit site.

24 (b) An identification of the precise location at the Borrow Pit site of the soils
25 transported from the Brooklake Road site.

26 ///

B-5

1 (c) An approvable soil sampling plan into vertical/horizontal areas of the soils
2 transported from the Brooklake Road site. Within thirty (30) days of receiving approval of this
3 sampling plan, the soil must be re-sampled, and a final report submitted to the Department.

4 6. Within forty five (45) days of the date of this Order, submit an approvable plan to
5 sample and analyze all areas of the site where soil suspected of having been contaminated by
6 petroleum has been either stored or disposed of, including that soil originating from the
7 Brooklake Road Site and the "D" Street overpass project.

8 7. Within fourteen (14) days of the Department's approval of the plan called for in
9 Section IV, Paragraph 6 above, begin implementing the plan as approved by the Department,
10 and complete the contained in the approved plan within sixty (60) days of Department approval.

11 8. Within 15 days of completion of any requirement under this Order, submit written
12 documentation which demonstrates Respondent's compliance with that requirement.

13 V. ASSESSMENT OF CIVIL PENALTIES

14 The Director imposes a civil penalty for the violation cited in Section III,
15 Paragraph 1 in the amount of \$3,000.

16 The findings and determination of Respondent's civil penalty pursuant to OAR 340-12-
17 045 are attached and incorporated as Exhibit No. 1.

18 VI. OPPORTUNITY FOR CONTESTED CASE HEARING

19 This Notice of Violation, Department Order and Assessment of Civil Penalty becomes
20 final unless Respondent requests, in writing, a hearing before the Environmental Quality
21 Commission. The request must be received by the Department's Rules Coordinator within
22 twenty one (21) days after the date of issuance of this Notice, and must be accompanied by a
23 written "Answer" to the allegations contained in this Notice.

24 ///

25 ///

26 ///

1 In the written "Answer", Respondent shall admit or deny each allegation of fact contained
2 in this Notice and Respondent shall affirmatively allege any and all affirmative claims or
3 defenses to violations and assessment of any civil penalty that Respondent may have and the
4 reasoning in support thereof. Except for good cause shown:

- 5 1. Factual matters not controverted shall be presumed admitted;
- 6 2. Failure to raise a claim or defense shall be presumed to be a waiver of such claim
7 or defense;
- 8 3. New matters alleged in the "Answer" shall be presumed to be denied unless
9 admitted in subsequent pleading or stipulation by the Department or Commission.

10 Send the request for hearing and "Answer" to: **DEQ Rules Coordinator, Management**
11 **Services Division, 811 S.W. Sixth Avenue, Portland, Oregon 97204.** Following receipt of a
12 request for hearing and an "Answer", Respondent will be notified of the date, time and place of
13 the hearing.

14 Failure to file a timely request for hearing and "Answer" may result in the entry of a
15 Default Order for the relief sought in this Notice.

16 Failure to appear at a scheduled hearing or meet a required deadline may result in a
17 dismissal of the request for hearing and also an entry of a Default Order.

18 The Department's case file at the time the Notice was issued may serve as the record for
19 purposes of entering the Default Order.

20 **VII. OPPORTUNITY FOR INFORMAL DISCUSSION**

21 In addition to filing a request for a contested case hearing, Respondent may also request
22 an informal discussion with the Department by attaching a written request to the hearing request
23 and "Answer".

24 ///

25 ///

26 ///

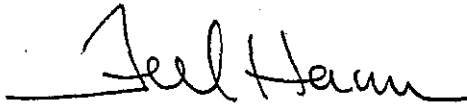
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VIII. PAYMENT OF CIVIL PENALTY

The civil penalty is due and payable ten (10) days after the Order imposing the civil penalty becomes final by operation of law or on appeal. Respondent's check or money order in the amount of \$3,000 should be made payable to "State Treasurer, State of Oregon" and sent to the Business Office, Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, Oregon 97204.

OCT 13 1994


Fred Hansen, Director

Date

EXHIBIT 1

FINDINGS AND DETERMINATION OF RESPONDENT'S CIVIL PENALTY
PURSUANT TO OREGON ADMINISTRATIVE RULE (OAR) 340-12-045

VIOLATION NO: ORS 459.205. Establishing, operating and maintaining a solid waste disposal site without a permit.

CLASSIFICATION: The violation is a Class I violation pursuant to OAR 340-12-065(1)(b).

MAGNITUDE: The magnitude of the violation is moderate pursuant to 340-12-090(4)(a)(ii) as the total amount of solid waste disposed of that did not constitute clean fill was between 40 and 400 cubic yards of waste.

CIVIL PENALTY FORMULA: The formula for determining the amount of penalty of each violation is: $BP + [(.1 \times BP) (P + H + O + R + C)] + EB$.

"BP" is the base penalty which is \$3,000 for a Class I moderate magnitude violation in the matrix listed in OAR 340-12-042(1).

"P" is Respondent's prior significant action(s) and receives a value of 0 as Respondent has no prior significant actions.

"H" is the past history of Respondent in taking all feasible steps or procedures necessary to correct any prior significant action(s) and receives a value of 0 as Respondent has no prior significant actions.

"O" is whether or not the violation was a single occurrence or was repeated or continuous during the period of the violation and receives a value of 2 as the violation was continuous from at least September 1, 1994 to October 3, 1994.

"R" is the cause of the violation and receives a value of 0 as there is insufficient information upon which to base a finding of other than 0.

"C" is Respondent's cooperativeness in correcting the violation and receives a value of -2 as Respondent has been cooperative in correcting the violation.

"EB" is the approximate dollar sum of the economic benefit that the Respondent gained through noncompliance, and receives a value of 0 as any economic benefit Respondent may have received through the improper disposal of the waste is negated by the Respondent's current cost in disposing of the wastes properly.

PENALTY CALCULATION:

Penalty	= BP	+ [(.1 x BP) (P + H + O + R + C)] + EB
	= \$3,000	+ [(.1 x 3,000) (0+0+2+0+(-2))] + 0
	= \$3,000	+ [(300) (0)] + 0
	= \$3,000	+ 0 + 0
	= \$3,000	



Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for international Mail
(See Reverse)

Sent to Ross Bros & Company Inc. Steven M Ross Registered Agent	
Street and No. 3501 Brooklake Road N	
P.O., State and ZIP Code Salem, OR 97303	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

CERTIFICATE OF MAILING

that I served Notice of Violation, Department Order and Assessment of Civil Penalty

274

Inc.
Registered Agent

3501 Brooklake Road N.

Salem, OR 97303

by mailing a true copy of the above by placing it in a sealed envelope, with postage prepaid, at the U.S. Post office in Portland, Oregon, on October 13, 1994

Is your RETURN ADDRESS completed on the reverse side?

SENDER: Complete items 1 and/or 2 for additional services. Complete items 3 and 4a & b. Print your name and address on the reverse of this form so that we can return this card to you. Attach this form to the front of the mailpiece, or on the back if space does not permit. Write "Return Receipt Requested" on the mailpiece below the article number. The Return Receipt will show to whom the article was delivered and the date delivered.		I also wish to receive the following services (for an extra fee): 1. <input checked="" type="checkbox"/> Addressee's Address 2. <input type="checkbox"/> Restricted Delivery Consult postmaster for fee.
3. Article Addressed to: Ross Bros. & Company, Inc. Steven M. Ross, Registered Agent 3501 Brooklake Road N. Salem, OR 97303	4a. Article Number P 003 419 067	Thank you for using Return Receipt Service.
5. Signature (Addressee) <i>[Signature]</i>	4b. Service Type <input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD <input type="checkbox"/> Express Mail <input type="checkbox"/> Return Receipt for Merchandise	
6. Signature (Agent)	7. Date of Delivery 10/15/94	
8. Addressee's Address (Only if requested and fee is paid)		

PS Form 3811, December 1991 U.S. GPO: 1993-352-714 DOMESTIC RETURN RECEIPT

PS Form 3800, June 1991

**DONALDSON, ALBERT, TWEET, CONNOLLY,
HANNA & MUÑIZ**

Attorneys at Law

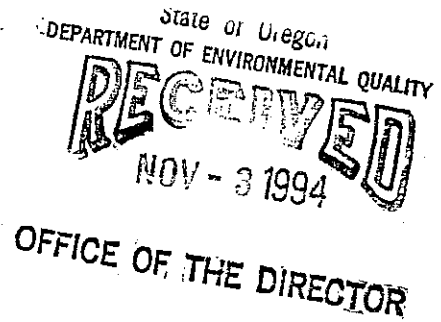
340 Vista Ave. S., Suite 310
P.O. Box 968
Salem, OR 97308
Telephone: (503) 585-2055
Fax: (503) 375-2649

Portland Office
1414 Bank of California Tower
707 SW Washington
Portland, OR 97205
Telephone: 248-1941
Fax: 224-1497

John D. Albert
Paul J. Connolly *
Robert W. Donaldson
Gordon R. Hanna
Michael T. Muñiz **
Stephen T. Tweet
James H. Kyung ***
* also admitted to practice in
Virginia & Washington, D.C.
** also admitted to practice in
California
*** also admitted to practice in
Washington

November 2, 1994

DEQ Rules Coordinator
Management Services Division
811 SW Sixth Avenue
Portland, OR 97204



via Federal Express


RE: In the Matter of Ross Bros. & Company, Inc.
No. SWP-WR-94-274
Our File No. 15417

Greetings:

This office represents Ross Bros. & Company, Inc. Enclosed please find our Answer in regards to the above violation number. This letter also serves as our **request** for a hearing before the Environmental Quality Commission. Please notify my office of the hearing date.

Very truly yours,

DONALDSON, ALBERT, TWEET,
CONNOLLY, HANNA & MUÑIZ


Gordon R. Hanna

GRH:sjd

Enclosure

cc w/encl:

Ross Bros. & Company, Inc.

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

3) ANSWER TO VIOLATION
4 IN THE MATTER OF) NO. SWP-WR-94-274
5 ROSS BROS. & COMPANY, INC.,) MARION COUNTY
6 an Oregon Corporation,) AND REQUEST FOR
7) HEARING
8 Respondent.)

9 Ross Bros. & Company, Inc. by and through its attorney, Gordon
10 R. Hanna and Donaldson, Albert, Tweet, Connolly, Hanna & Muñiz,
11 requests a contested case hearing and answers the Notice of
12 Violation, Department Order and Assessment of Civil Penalty as
13 follows.

14 1.

15 Admits that the Respondent is a construction company that
16 performs construction activities.

17 2.

18 Admits that the Department inspected the site in September
19 1994.

20 3.

21 Admits that Respondent provided trip tickets to the Department
22 in early 1994.

23 4.

24 Admits that Respondent provided a remediation report to the
25 Department in March 1994.

26 5.

27 Admits that, as a part of a construction contract with the
28 State of Oregon, Respondent removed soil from near the "D" Street

1 overcrossing of Interstate 5 in Salem, Oregon and placed some of
2 the soil on the rim of the borrow pit.

3 6.

4 Admits that in September 1994 the Department collected samples
5 at the borrow pit and a location near the "D" Street overcrossing
6 of Interstate 5 in Salem, Oregon.

7 7.

8 Except as specifically admitted herein, Respondent denies each
9 and every other matter and thing alleged herein.

10 **FIRST AFFIRMATIVE DEFENSE**

11 8.

12 Prior to the issuance of the Notice of Violation, Respondent
13 conferred with the Department personnel to arrange a procedure to
14 allow clean fill to be placed in the borrow pit. Respondent has
15 complied with the procedure provided by the Department and all
16 orders issued by the Department related to the borrow site.

17 **SECOND AFFIRMATIVE DEFENSE**

18 9.

19 The materials placed by Respondent in the borrow pit
20 constituted clean fill for which no permit was necessary.

21 **THIRD AFFIRMATIVE DEFENSE**

22 10.

23 It was improper to assign an occurrence value of 2 when
24 Respondent had fully complied with all Department requests made
25 concerning the site.

Page 2 - ANSWER OF ROSS BROS. & COMPANY TO VIOLATION

DONALDSON, ALBERT, TWEET, CONNOLLY,
HANNA & MUÑIZ
PO Box 968
Salem, OR 97308
(503) 585-2055

B-13

FOURTH AFFIRMATIVE DEFENSE

11.

It was improper to treat the alleged violation as a Class I moderate magnitude violation.

DATED this 2nd day of November, 1994.

DONALDSON, ALBERT, TWEET,
CONNOLLY, HANNA & MUÑIZ

By 

Gordon R. Hanna, OSB# 78237
of Attorneys for Respondent

sjd\rossdeq.ans

November 22, 1994

Chris Rich
Rules Coordinator
Management Services Division
Department of Environmental Quality
811 SW 6th
Portland, OR 97204

Re: Request to Schedule a Contested Case
Hearing in the Matter of Ross Bros.
Construction Co. Inc.
Case No. SWP-WR-94-274
Marion County

Dear Mr. Rich:

The Department has received numerous requests from individuals requesting party status in the above case.

Therefore, we request that you contract with a hearings officer to set to determine whether party status should be granted in this matter. The Department's contact in this case is Ed Druback, Enforcement Section, 229-5151. Ross's contact in this case is Gordon R. Hanna, Attorney at Law, PO Box 968, Salem, Oregon 97308, phone 585-2055.

Sincerely,



Van A. Kollias, Manager
Enforcement Section

VAK:ed

cc: Western Region, Salem Office, DEQ
Solid Waste Program, DEQ
Ed Druback, Enforcement Section
Gordon Hanna, Attorney at Law



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993
DEQ-1



October 30, 1994

Mr. Ed Druback
Dept. of Environmental Quality
811 S.W. Sixth Ave.
Portland, Oregon 97204-1390

REGIONAL OPERATIONS DIVISION
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
NOV 8 1994

Re: Attaining Party Status Re: SWP-WR-94-274

Please be advised that I would like to participate as an interested party in the above matter.

I live and am a property owner in the immediate vicinity of the "Borrow Pit" site commonly referred to as Barnick Lake.

I have an interest in the outcome of Oregon D.E.Q.'s violation proceedings against Ross Bros. and Company, Inc. concerning disposal of solid and contaminated waste at this site.

The dumping that occurs at this site directly affects our drinking (well) water; is unsightly; will potentially contaminate soils of surrounding properties, and decreases our property values.

The neighbors of this site brought the illegal dumping to the attention of D.E.Q. We have found and pointed out the inconsistencies in D.E.Q.'s own files regarding this site. It is only right that we be allowed to continue our vested interest in the matter.

I feel the need to be informed of all formal and informal proceedings pertaining to SWP-WR-94-274 including, but not limited to, all hearings, appeals, orders, plans or any papers filed regarding this site.

I would like to reserve the right to attend and testify at any hearings regarding this site.

I need to be a party to the above because I do not necessarily feel the existing parties to the proceeding can or will adequately represent my interests.

Please accept this petition in accordance with OAR 137-03-005.

Respectfully submitted,

Marsha P. Bowerly

October 28, 1994

REGIONAL OPERATIONS DIVISION
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
NOV 8 1994

Mr. Ed Druback
Dept of Environmental Quality
811 SW 6th Ave
Portland, OR 97204-1390

Re:Attaining Party Status Re:SWP-WR-94-274

Please be advised that I would like to participate as an interested party in any formal or informal hearing/meeting held with or by the DEQ with respect to the above matter.

I am a property owner near the Barnick Lake property and have an interest in the outcome of Oregon DEQ violation proceedings under the above order.

Ross Bros. by establishing, operating and maintaining an illegal solid waste disposal site directly affects my quality of life. Potentially affecting my well and drinking water, air quality, and can impact my property's value.

The existing parties to the proceedings have indicated that resources to not exist to adequately represent and thereby protect all of my interests and concerns. Some of the parties have exhibited an apparent lack of concern in protecting my interests. This being the case I would like to be a party to any formal or informal hearing to ensure my interests as a property owner near this site are adequately represented and protected.

Please accept this petition in accordance with OAR 137-03-005.

Respectfully submitted,

Donald Gubskov

RECEIVED
NOV 8 1994

October 30, 1994

Mr. Ed Druback
Dept. of Environmental Quality
811 S.W. Sixth Ave.
Portland, Oregon 97204-1390

Re: Attaining Party Status Re: SWP-WR-94-274

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I would like to reserve the right to attend and testify at any hearings regarding this site.

I need to be a party to the above because I do not necessarily feel the existing parties to the proceeding can or will adequately represent my interests.

Please accept this petition in accordance with OAR 137-03-005.

Respectfully submitted,

Phyllis G. Druback
2890 Herbert Rd. NE
Salem, Or. 97303

RECEIVED
NOV 8 1994

October 30, 1994

Mr. Ed Druback
Dept. of Environmental Quality
811 S.W. Sixth Ave.
Portland, Oregon 97204-1390

Re: Attaining Party Status Re: SWP-WR-94-274

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I would like to reserve the right to attend and testify at any hearings regarding this site.

I need to be a party to the above because I do not necessarily feel the existing parties to the proceeding can or will adequately represent my interests.

Please accept this petition in accordance with OAR 137-03-005.

Respectfully submitted,

Colleen Schreiner
Colleen Schreiner
7041 35th Ave NE
Salem, OR 97303

202-74115

B-19

October 28, 1994

REGIONAL OPERATIONS DIVISION
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
NOV 8 1994

Mr. Ed Druback
Dept of Environmental Quality
811 SW 6th Ave
Portland, OR 97204-1390

Re:Attaining Party Status Re:SWP-WR-94-274

David C Schmerber
3310 Perkins St NE
Salem OR 97303

Please be advised that I would like to participate as an interested party in any formal or informal hearing/meeting held with or by the DEQ with respect to the above matter.

I am a property owner near the borrow pit site, and have an interest in the outcome of Oregon DEQ violation proceedings under the above order.

The dumping and other violations that occur at this site directly affects my drinking water, air quality, and also impacts my property value and personal rights. If Steve Ross does not properly clean up this site, including removing substantial illegal waste that is buried on this site, my drinking water will not be safe. The results of this hearing will also have an impact on wildlife which use the site and may have an impact on their continued existence.

The existing parties to the proceedings cannot adequately represent the interests identified above, as they have already shown through lack of follow up and enforcement that they are unable to protect my interest. In addition, they have also verbally advised me that they will not seek to protect some of the concerns and interests I have identified to them.

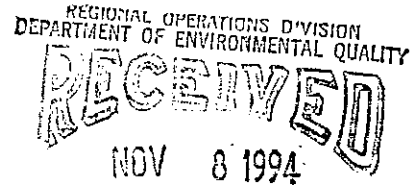
Please accept this petition in accordance with OAR 137-03-005.

Respectfully submitted,

David C Schmerber

October 30, 1994

Mr. Ed Druback
Dept. of Environmental Quality
811 S.W. Sixth Ave.
Portland, Oregon 97204-1390



Re: Attaining Party Status Re: SWP-WR-94-274

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I live and am a property owner in the immediate vicinity of the "Borrow Pit" site commonly referred to as Barnick Lake.

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I feel the need to be informed of all formal and informal proceedings pertaining to SWP-WR-94-274 including, but not limited to, all hearings, appeals, orders, plans or any papers filed regarding this site.

I would like to reserve the right to attend and testify at any hearings regarding this site.

I need to be a party to the above because I do not necessarily feel the existing parties to the proceeding can or will adequately represent my interests.

Please accept this petition in accordance with OAR 137-03-005.

Patricia Schreiner

Respectfully submitted,

Patricia Schreiner
3705 Quinaby Rd. NE
Salem, OR 97303

October 28, 1994

REGIONAL OPERATIONS DIVISION
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
NOV 8 1994

Mr. Ed Druback
Dept of Environmental Quality
811 SW 6th Ave
Portland, OR 97204-1390

Re:Attaining Party Status Re:SWP-WR-94-274

Mary Deoxy
2995 Perkins St NE
Salem OR 97303

Please be advised that I would like to participate as an interested party in any formal or informal hearing/meeting held with or by the DEQ with respect to the above matter.

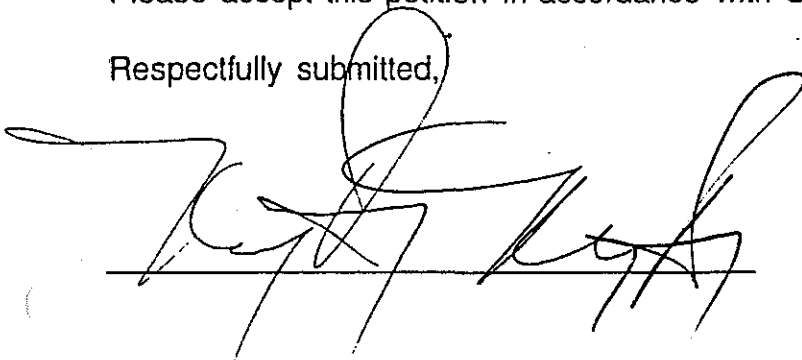
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The existing parties to the proceedings have indicated that resources to not exist to adequately represent and thereby protect all of my interests and concerns. Some of the parties have exhibited an apparent lack of concern in protecting my interests. This being the case I would like to be a party to any formal or informal hearing to ensure my interests as a property owner near this site are adequately represented and protected.

Please accept this petition in accordance with OAR 137-03-005.

Respectfully submitted,



October 28, 1994

REGIONAL OPERATIONS DIVISION
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
NOV 8 1994

Mr. Ed Druback
Dept of Environmental Quality
811 SW 6th Ave
Portland, OR 97204-1390

Re:Attaining Party Status Re:SWP-WR-94-274

TROY & LAURIE COSTALES
7132 35th AVE NE
SALEM OR 97303

Please be advised that I would like to participate as an interested party in any formal or informal hearing/meeting held with or by the DEQ with respect to the above matter.

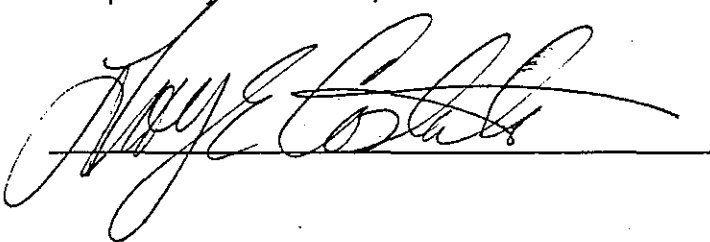
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The dumping and other violations that occur at this site directly affects my drinking water, air quality, and also impacts my property value and personal rights. If Steve Ross does not properly clean up this site, including removing substantial illegal waste that is buried on this site, my drinking water will not be safe. The results of this hearing will also have an impact on wildlife which use the site and may have an impact on their continued existence.

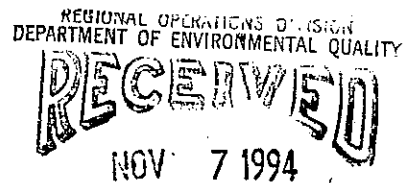
The existing parties to the proceedings cannot adequately represent the interests identified above, as they have already shown through lack of follow up and enforcement that they are unable to protect my interest. In addition, they have also verbally advised me that they will not seek to protect some of the concerns and interests I have identified to them.

Please accept this petition in accordance with OAR 137-03-005.

Respectfully submitted,



October 28, 1994



Mr. Ed Druback
Dept of Environmental Quality
811 SW 6th Ave
Portland, OR 97204-1390

Re:Attaining Party Status Re:SWP-WR-94-274

DAVID G. BOWERLY

2986 Perkins St NE

Salem, OR, 97303

Phone -work (503) 393 6286
home (503) 393 7367

Please be advised that I would like to participate as an interested party in any formal or informal hearing/meeting held with or by the DEQ with respect to the above matter.

I am a property owner near the borrow pit site, and have an interest in the outcome of Oregon DEQ violation proceedings under the above order.

The dumping and other violations that occur at this site directly affects my drinking water, air quality, and also impacts my property value and personal rights. If Steve Ross does not properly clean up this site, including removing substantial illegal waste that is buried on this site, my drinking water will not be safe. The results of this hearing will also have an impact on wildlife which use the site and may have an impact on their continued existence.

The existing parties to the proceedings cannot adequately represent the interests identified above, as they have already shown through lack of follow up and enforcement that they are unable to protect my interest. In addition, they have also verbally advised me that they will not seek to protect some of the concerns and interests I have identified to them.

Please accept this petition in accordance with OAR 137-03-005.

Respectfully submitted,

David G. Bowerly



800 NE Oregon Street, #6
 Portland, OR 97232
 (503) 731-4041
 FAX (503) 731-4042

1 GORDON R. HANNA, OSB #78237
 2 DONALDSON, ALBERT, TWEET,
 3 CONNOLLY, HANNA & MUÑIZ
 4 340 Vista Avenue S., Suite 310
 5 PO Box 968
 6 Salem, OR 97308
 7 (503)585-2055

8 BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
 9 OF THE STATE OF OREGON

10	IN THE MATTER OF	)	MEMORANDUM
11	ROSS BROS. & COMPANY, INC.,	)	IN OPPOSITION
12	an Oregon corporation,	)	TO INTERVENTION
13)	
14		)	No. SWP-WR-94-274
15	Respondent.	)	MARION COUNTY

16 This is a Notice of Violation proceeding in which DEQ alleges
 17 illegal disposal of fill materials in a borrow pit. DEQ proposes
 18 a \$3,000.00 fine. Ross Bros. Construction, the cited party, has
 19 denied the allegations and sought a contested case hearing.

20 The borrow pit is a large depression in the ground created
 21 when the State excavated materials used in the construction of
 22 Interstate 5. The pit is located near Interstate 5, near the
 23 intersection of Perkins Road and 35th Streets. The property was
 24 purchased in April, 1994 by Steven and Cassie Ross. The Rosses
 25 intend to place allowed, clean fill in the pit until the site is
 26 leveled, then cover the pit area with topsoil and return the land
 27 to farm use. The petitioners are neighboring property owners
 28 opposed to this plan.

1 Intervention is controlled by OAR 137-03-005, which contains
2 the information required in a petition to intervene. There are a
3 list of criteria which the hearings officer "shall consider." They
4 are listed as OAR 137-03-005 (7) (a) - (d).¹

5 There is no personal or public interest in whether Ross Bros.
6 Construction, Inc. is found to have placed illegal fill. The
7 proceeding is entirely retrospective and the facts will not change.
8 The neighbors evidently are concerned about the nature of fill
9 placed in the pit in the future. This proceeding cannot address
10 that issue, since current Oregon law allows placement of clean fill
11 in the pit.

12 The petitioners uniformly raise several issues regarding their
13 interests: their drinking water will be affected, unsightliness,
14 potential contamination of soils, and decreases in property values.
15 We do not wish to minimize these concerns, but a violation
16 proceeding is not the proper forum for such discussions. All DEQ
17 can do is impose fines and orders for past conduct. It cannot
18 prevent placement of clean fill in the pit.

19 ¹. The mandatory criteria are:

20 (a) Whether the petitioner has demonstrated a personal or public interest
21 that could reasonably be affected by the outcome of the proceeding;

22 (b) Whether any such affected interest is within the scope of the agency's
23 jurisdiction and within the scope of the notice of contested case hearing;

24 (c) When a public interest is alleged, the qualifications of the
25 petitioner to represent that interest; and

(d) The extent to which the petitioner's interest will be represented by existing parties.

Page 2 - MEMORANDUM IN OPPOSITION TO INTERVENTION
DONALDSON, ALBERT, TWEET, CONNOLLY,
HANNA & MUÑIZ
PO Box 968
Salem, OR 97308
(503) 585-2055

No general public interest is asserted.

The petitioner's interests are well represented. At the urging of the petitioners the following actions have occurred:

- 1. A small portion of the pit has been declared a wetland by the Army Corp of Engineers;
- 2. Marion County has issued a citation for violation of land use regulations, which is being contested;
- 3. DEQ has issued this Notice of Violation and routinely monitors the site, even though its personnel admit that there is no significant environmental risk associated with the site.

The mandatory criteria suggest that the neighbors not be made parties to this proceeding.

In addition, other criteria may be appropriate. For instance, in this case the hearings officer should also consider the nature of the proceeding, the magnitude of the claims, and the collateral consequences of allowing additional parties, such as undue delay,

18 times to hear from ten additional parties. That is especially true
19 where, as here, no violation would have been issued except for the
20 insistence of the petitioners and DEQ is clearly looking out for
21 their interest.

22 CONCLUSION


23 The participation of the neighbors will unduly delay and
24 complicate the proceedings. DEQ is well representing their
25 concerns. The Notice of Violation proceeding is essentially one to

Page 3 - MEMORANDUM IN OPPOSITION TO INTERVENTION
DONALDSON, ALBERT, TWEET, CONNOLLY,
HANNA & MUÑIZ
PO Box 968
Salem, OR 97308
(503) 585-2055

1 determine whether certain conduct has occurred in the past. The
2 neighbors' concerns about future activities cannot be addressed in
3 this proceeding. The petitions should be denied.

4 DATED this 20th day of December, 1994.

5 DONALDSON, ALBERT, TWEET,
6 CONNOLLY, HANNA & MUÑIZ

7 By 
8 Gordon R. Hanna
9 OSB# 78237
10 of attorneys for
11 Respondent

12 gfh/rospl_memo
13 ddi

Page 4 - MEMORANDUM IN OPPOSITION TO INTERVENTION
DONALDSON, ALBERT, TWEET, CONNOLLY,
HANNA & MUNIZ
PO Box 968
Salem, OR 97308
(503) 585-2055

4 340 Vista Avenue S., Suite 310
5 PO Box 968
6 Salem, OR 97308
7 (503) 585-2055

8 BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
9 OF THE STATE OF OREGON

10	IN THE MATTER OF	)	CERTIFICATE
11	ROSS BROS. & COMPANY, INC.,	)	OF SERVICE
12	an Oregon corporation,)	
13)	
14		)	No. SWP-WR-94-274
15	Respondent..	)	MARION COUNTY

16 I hereby certify that on the date noted below, I served the
17 MEMORANDUM IN OPPOSITION TO INTERVENTION on the following persons
18 listed below, by depositing to each a correct copy thereof, postage
19 prepaid, addressed to them at the addresses noted below and
20 deposited in the said post office at Salem, Oregon on said day.
21 Between the said post office and the address to which said copy was
22 mailed, there is a regular communication of U.S. Mail.

23 Donald Gribskov
24 Phyllis Gribskov
25 2890 Perkins Rd. NE
26 Salem, OR 97303

27 Colleen Schreiner
28 7641 35th Ave NE
29 Salem, OR 97303

30 David Schmerber
31 3310 Perkins St. NE
2 Salem, OR 97303

Page 1 - CERTIFICATE OF SERVICE

DONALDSON, ALBERT, TWEET, CONNOLLY,
HANNA & MUÑIZ
PO Box 968
Salem, OR 97308
(503) 585-2055

1 Patricia Schreiner
 2 3705 Quinaby Rd. NE
 3 Salem, OR 97303

4 Mary Deeney
 5 2995 Perkins St. NE
 6 Salem, OR 97303

Rick Roemer
 PO Box 20715
 Keizer, OR 97307-0715

7 Troy and Laurie Costales
 8 7132 35th Ave. NE
 9 Salem, OR 97303

10 David G. Bowerly
 11 Marsha P. Bowerly
 12 2986 Perkins St. NE
 13 Salem, OR 97303

14 DATED this 20th day of December, 1994.

DONALDSON, ALBERT, TWEET,
 CONNOLLY, HANNA & MUÑIZ

By Gordon R. Hanna
 Gordon R. Hanna
 OSB# 78237
 of attorneys for
 Respondent

17
 18
 19
 20
 21
 22
 23

grh@aspi.com
 ddi

DEPARTMENT OF
HUMAN
RESOURCES

EMPLOYMENT DIVISION
Hearings Section, Suite 225

December 28, 1994

REGIONAL OPERATIONS DIVISION
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED
DEC 29 1994

Ed Druback
Department of Environmental Quality
811 S.W. Sixth
Portland, OR 97204

RE: Hearing for Ross Brothers Construction (Case SWP-WR-94-274)

A hearing in regards to the respondent's request for hearing will be on Thursday, January 19, 1995, at 9:00 a.m. at the DEQ office, 750 Front St. N.E., Suite 120, Salem, Oregon, as agreed by the parties at the hearing on December 22, 1994.

Enclosed is a copy of the Notice of Contested Case Rights and Procedures. Limited parties should note that some of their rights have been limited, as stated in the enclosed Order of Party Status.

Please call if you have any questions or conflicts.

Sincerely,

Lawrence S. Smith
Administrative Law Judge
Portland Hearings Section

Enclosures

lss

cc: Gordon Hanna, attorney for Ross Brothers Construction Co.
The limited parties
File

Barbara Roberts
Governor



800 NE Oregon Street, #6
Portland, OR 97232
(503) 731-4041
FAX (503) 731-4042

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

IN THE MATTER OF	)	ORDER OF
ROSS BROTHERS & COMPANY, INC.,	)	PARTY STATUS
an Oregon corporation, respondent	)	No. SWP-WR-94-274
	)	MARION COUNTY

On December 22, 1994, a hearing was held in the office of the Department of Environmental Quality (DEQ) in Salem, Oregon, to consider the petitioners' request for party status. Petitioners Rick Roemer, David Schmerber, and Mary Deeney appeared. Petitioner Marsha Bowerly appeared on behalf of herself and petitioners David Bowerly and David and Phyllis Gribskov. Petitioner Colleen Schreiner appeared on behalf of herself and petitioner Patricia Schreiner. Before the hearing, petitioners Troy and Laurie Costales requested participation based on their initial petitions. Their petitions were accepted in lieu of appearance. The respondent, Ross Brothers and Company, Inc., was represented by its attorney, Gordon Hanna. By telephone conference, Ed Druback participated on behalf of DEQ.

ISSUE

Shall the petitioners be considered parties under OAR 137-03-005?

FINDINGS

(1) The petitioners are Marsha and David Bowerly, Troy and Laurie Costales, Mary Deeney, Donald and Phyllis Gribskov, Rick Roemer, David Schmerber, Colleen Schreiner, and Patricia Schreiner.

(2) The petitioners all live within 800 feet of the Borrow Pit site (also known as Barnick Lake), which is owned by the respondent. (3) Their home water supply is from wells on their property. (4) Because of concerns that dumping on the Borrow Pit site might affect the ground water and air quality, the petitioners, individually and collectively, repeatedly sought enforcement action by DEQ against the respondent for allegedly dumping non-clean fill in Borrow Pit. (5) In response to the requests from the petitioners, DEQ performed tests on the site, which led to the issuance of a Notice of Violation, Department Order and Assessment of Civil Penalty on October 13, 1994 (Exhibit 3).

(6) Since first contacting DEQ, some of the petitioners have continued to monitor the Borrow Pit site. (7) They have consulted with a specialist to determine whether further tests should be made. (8) They have also been involved in seeking enforcement of zoning regulations for the Borrow Pit site. (9) Some of the petitioners have seen unclean fill being dumped in the Borrow Pit. (10) They seek enforcement of the Notice and Assessment of Penalty to deter respondent from any illegal dumping in the future. (11) They also seek enforcement of the corrective issues stated in the Department Order. (12) They have been told by DEQ that DEQ lacks the resources to monitor the Borrow Pit as often as the petitioners can.

(13) The petitioners agree that Mary Deeney shall act as their agent for the receipt of any documents. (14) Her address is 2995 Perkins St. N.E., Salem, OR 97303.

CONCLUSION

The petitioners are granted limited party status, as outlined below.

The petitioners' requests for party status are considered under OAR 137-03-005. The respondent did not allege that the petitioners' petitions were deficient or untimely. The only issue is whether the petitioners should be granted party status under the criteria listed in subsection (7). Those criteria are:

(a) Whether the petitioner has demonstrated a personal or public interest that could reasonably be affected by the outcome of the proceeding;

(b) Whether any such affected interest is within the scope of the agency's jurisdiction and within the scope of the notice of contested case hearing;

(c) When a public interest is alleged, the qualifications of the petitioner to represent that interest;

(d) The extent to which the petitioner's interest will be represented by existing parties.

The petitioners asserted a personal interest in the hearing, so subsection (c) is not applicable. They have established that their personal interest could reasonably be affected by the outcome of the proceeding because they all rely on a clean water table under their land and the dumping on the Borrow Pit site could affect that water table. They have a clear interest in sanctioning and stopping any alleged illegal dumping in the Borrow Pit. Their repeated requests to DEQ after monitoring activities at the site led to the enforcement action. Such monitoring will be needed in the future if the Department Order is upheld because the Order requires future compliance to all laws and removal of all waste. The Notice imposes both a sanction for past acts and an injunction against future violations, so if the Notice is upheld, the continuing involvement of the petitioners is important to protect their interests. Illegal dumping at the site, if established, would clearly affect their personal interests.

Regarding subsection (7)(b), the petitioners' interest in a clean water table and clean air are within DEQ's jurisdiction and within the scope of the hearing.

Regarding subsection (7)(d), while DEQ has interests similar to petitioners', its interest is more general on behalf of the public. DEQ has admitted to the petitioners that it does not have the resources to monitor the Borrow Pit as well as they do. Under these circumstances, the petitioners' participation is needed to best protect their rights.

The petitioners have established sufficient grounds under the above criteria to become limited parties. Under subsection (8) of the rule, their petitions may be considered as petitions for limited party status. There are 11 petitioners, as listed in Finding #1. Full participation by that number of parties can cause unnecessary delays in the hearing. The petitioners' interests are basically unified, so as they agreed in Finding #11, their representative for service of documents and notice shall be Mary Deeney. Because of their number and lack of legal training, their rights are limited as follows:

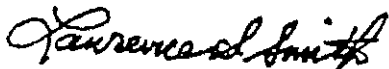
1. They have the right to notice of the hearing and the right to receive and review all evidence presented in the hearing, through their representative, Mary Deeney.
2. They have the right to present evidence, including their own testimony at the hearing.
3. They do not have the right to cross-examine other witnesses or parties. If they have some information which rebuts testimony of another witness or party, they can present that evidence through their own testimony.
4. They have a right to make a reasonable request for relevant evidence from the respondent and, if their request is denied, to request a subpoena from the hearings officer.
5. They have the right to receive any orders in this case through their representative and the right to request review of any action taken after the hearing in this case.

The rights as listed above are not forfeited if not exercised at the hearing. Nothing in this order prohibits the petitioners from acting collectively through one of their members.

The respondent's request to limit the petitioners' participation to only the penalty phase is denied. The petitioners have as much interest in whether the violation occurred because if it is determined that the violation occurred, such a determination would greatly affect whether sanctions should be imposed.

ORDER

The petitioners' requests to become limited parties is granted under OAR 137-03-005, as stated above.



Lawrence S. Smith
Hearings Officer

Date of mailing: 12-28-94

lss

Appeal Rights

If you are not satisfied with this decision, you have 30 days to appeal it to the Environmental Quality Commission. If you wish to appeal the Commission's decision, you have 60 days to file a petition for review with the Oregon Court of Appeals from the date of service of the order by the Environmental Quality Commission. See ORS 183.480 et seq.

RECEIVED

JAN 25 1995

January 20, 1995

DEPARTMENT OF
HUMAN
RESOURCES

EMPLOYMENT DIVISION
Hearings Section, Suite 225

Rick J. Roemer
c/o Mary Deeney
P.O. Box 9083
Brooks, OR 97305

RE: Request for reconsideration of Order of Party Status by
Rick Roemer (Case SWP-WR-94-274)

On January 6, 1995, the limited party Rick Roemer requested
reconsideration of the Order of Party Status. His arguments
were considered, but were not persuasive because they were
originally considered. The Order remains undisturbed.

ORDER

The Order of Party Status, issued December 28, 1994, is not
modified.

/s/ Lawrence S. Smith

Lawrence S. Smith
Administrative Law Judge
Portland Hearings Section

lss

cc: Gordon Hanna, attorney for Ross Brothers Construction Co.
Ed Druback of DEQ
File

Barbara Roberts
Governor



800 NE Oregon Street, #6
Portland, OR 97232
(503) 731-4041
FAX (503) 731-4042

January 6, 1995

Lawrence S. Smith
Administrative Law Judge
800 NE Oregon St #6
Portland, OR 97232

Facsimile Transmitted 503-731-4042

Re: Ross Bros. SWP-WR-94-274

REQUEST FOR RECONSIDERATION OF DETERMINATION
REGARDING RIGHTS OF LIMITED PARTIES

I am requesting your reconsideration of the rights you granted me as a limited party under your decision dated December 28, 1994.

While I have demonstrated conformity with OAR 137-03-005, I believe the limitation you have placed upon my rights as a limited party severely curtail my ability to effectively represent and protect my personal interest. I believe the ability to cross-examine other witnesses and parties is of utmost importance to my involvement. It also gives an unfair advantage to Ross Bros, who do have the right to cross examine my witnesses or me directly.

While you have noted that I do have the right to call witnesses, and rebut the testimony of other witnesses by my own testimony, in some cases my testimony may only be hearsay rather than fact, if it comes from a witness or other party. I do not believe that I will be adequately able to bring out all the facts or evidence necessary to present my interest without the right of cross examination.

I also believe it will complicate and lengthen the hearing if instead of cross examining the witness or party at the same time the other parties are doing so, that I or others are forced to give testimony as rebuttal.

This request for reconsideration is on my own behalf only, however I would be willing to submit to only one interested party having the right to cross examine on behalf of all interested parties should you decide to place this limitation in favor of an expeditious hearing.

Sincerely,

Rick J. Roemer
cc: Gordon Hanna

January 23, 1995

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION OF THE STATE OF OREGON

IN THE MATTER OF (PETITION FOR RECONSIDERATION
ROSS BROTHERS & COMPANY, INC. (OF LIMITED PARTY STATUS
an Oregon corporation, respondent (No. SWP-WR-94-274
(MARION COUNTY

ISSUE - CROSS EXAMINATION PRIVILEGES/PARTY STATUS

On December 22, 1994, a hearing was held in the office of the Department of Environmental Quality (DEQ) in Salem, Oregon, to consider the petitioners request for party status. Petitioners Rick Roemer, David Schmerber, and Mary Deeney appeared. Petitioner Marsha Bowerly appeared on behalf of herself and petitioners David Bowerly and Don and Phyllis Gribkov. Petitioner Colleen Schreiner appeared on behalf of herself and petitioner Patricia Schreiner. Before the hearing, petitioners Troy and Laurie Costales requested participation based on their initial petitions. Their petitions were accepted in lieu of appearance. The respondent, Ross Brothers and Company, Inc., was represented by its attorney, Gordon Hanna. By telephone conference, Ed Druback participated on behalf of DEQ. Lawrence S. Smith, Administrative Law Judge with the Dept. of Human Resources attended as the Hearings Officer on behalf of the Environmental Quality Commission.

FINDINGS

The petitioners established the requirement of OAR 137-03-005, that their personal interest could reasonably be affected by the outcome of the proceeding. They all rely on a clean water table under their land and the dumping on the Borrow Pit site could affect that water table. The petitioners established a clear interest in sanctioning and stopping any alleged illegal dumping in the Borrow Pit. The continuing involvement of the petitioners is important to protect their interests. Illegal dumping at the site, if established, would clearly affect their personal interests. Limited party status was granted under OAR 137-03-005 subsection (8) of the rule.

CONCLUSION

The petitioners have been denied party status and granted limited party status because of "the number of petitioners who asserted a personal interest in the hearing and their lack of legal training." The number of interested parties, nor the lack of legal training, should preclude any individual from being granted party status, and certainly not the denial of cross-examination privilege. According to OAR 137-03-005 (7), the number of interested parties, or their legal training is a criteria, which the hearings officer may consider when determining whether to grant party or limited party status. This limitation clearly denies the parties the right to evidence which can only be brought about through cross-examination. The respondent (Ross Bros.) has already invoked attorney/client privilege and their attorney is only going to ask his witnesses or other witnesses questions which support their position and not those which will bring out all relevant information. Cross-examination of the respondent or other witnesses is how all relevant information will be obtained. The petitioners ability to fully participate in the proceedings is imperative to protect their interests. The petitioners have agreed to have one amongst their group speak for the petitioners at the hearing for the purpose of cross-examination. If the petitioners do not have the ability to rebut the testimony of witnesses or other parties by cross-examination, it would put them at a disadvantage, and certainly give an advantage to the respondent and or their attorney. Unquestionably, if the petitioners must rebut the testimony of witnesses and other parties exclusively through their own testimony it could cause unnecessary delays in the hearing. The petitioners were provided with a copy of "Notice of Contested Case Rights and Procedures" and realize their responsibility with regard to becoming parties to this hearing, and will abide by the rules that apply to this hearing. Lack of legal training and numbers should not be the basis for denying the petitioners party status, and thereby limiting their ability to protect their interests. The petitioners ask for reconsideration and party status be granted.

Mary Deeney for the petitioners

Rick Roemer
David Schmerber
Marsha & David Bowerly
Don & Phyllis Gribskov
Colleen Schreiner
Patricia Schreiner
Troy & Laurie Costales
Mary Deeney

MARY DEENEY FOR THE PETITIONERS
P.O. BOX 9083
BROOKS, OR. 97305
503-393-8089

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION OF THE STATE OF OREGON

IN THE MATTER OF) CERTIFICATE
ROSS BROS. & COMPANY, INC.) OF SERVICE
an Oregon Corporation,) No. SWP-WR-94-274
Respondent.)

I hereby certify that on the date noted below, I served the PETITION FOR RECONSIDERATION OF LIMITED PARTY STATUS on the following persons listed below, by depositing to each a correct copy thereof, postage prepaid, addressed to them at the addresses noted below and deposited in the said post office at Brooks, Oregon on said day. Between the said post office and address to which said copy was mailed, there is a regular communication of U.S. Mail.

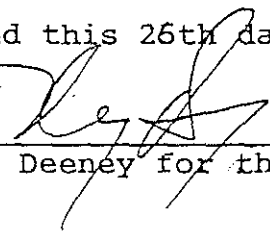
THE ENVIRONMENTAL QUALITY COMMISSION
William Wessinger/Chairman
121 S.W. Salmon Suite 1100
Portland, OR. 97204

DEPARTMENT OF ENVIRONMENTAL QUALITY
ENFORCEMENT SECTION
Ed Druback
811 S.W. Sixth Ave.
Portland, OR. 97204-1390

DEPARTMENT OF HUMAN RESOURCES
EMPLOYMENT DIVISION
Lawrence S. Smith
800 N.E. Oregon St. #6
Portland, OR. 97232

Gordon R. Hanna
340 Vista Ave. S., Suite 310
P.O. Box 968
Salem, OR. 97308

Dated this 26th day of January, 1995

By 
Mary Deeney for the Petitioners

Environmental Quality Commission

- Rule Adoption Item
 Action Item
 Information Item

Agenda Item G
April 14, 1995 Meeting

Title:

Proposed Amendments to the Memorandum of Agreement between the EQC and Oregon Department of Agriculture pertaining to management of CAFO facilities

Summary:

The Department requests that the Environmental Quality Commission (EQC) amend the Memorandum of Agreement between the EQC and the Oregon Department of Agriculture (ODA) dated February 14, 1994. The Agreement provides for the ODA to operate a program for the prevention and control of water pollution from confined animal feeding operations (CAFOs).


The DEQ and ODA have shared regulatory responsibility for management of CAFO facilities. As outlined in the existing Memorandum of Agreement between the EQC and ODA, the ODA provides technical assistance to CAFO owners and operators, and manages CAFO facilities covered by the general permit, including enforcement. The DEQ manages CAFOs with individual permits, recommends issuance of tax credit certificates, and undertakes enforcement actions for CAFOs operating with individual permits.


Recently enacted state law (Chapter 567 Oregon Laws 1993, SB 1008) requires the EQC and ODA to enter into a memorandum of understanding providing for ODA to operate a CAFO waste management program, allowing ODA to perform any function of the DEQ (including final enforcement actions) relating to CAFOs, and allowing the ODA to impose civil penalties on owners or operators of CAFO facilities for failure to comply with water quality requirements. The current Memorandum of Agreement does not fully satisfy the legislative intent of the 1993 law.

The amended Memorandum of Agreement (retitled Memorandum of Understanding) is contained in Attachment A of the report.

Department Recommendation:

It is recommended that the Commission enter into the proposed Memorandum of Understanding (MOU) with the Oregon Department of Agriculture so that the ODA may assume full responsibility for operating a statewide program to prevent and control water pollution from confined animal feeding operations (CAFOs). It is further recommended that the EQC authorize the Director to sign the MOU on behalf of the EQC. The proposed MOU is included as Attachment A of this report.


Report Author


Division Administrator


Director

March 27, 1995

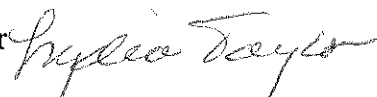
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†Accommodations for disabilities are available upon request by contacting the Public Affairs Office at (503)229-5317(voice)/(503)229-6993(TDD).

State of Oregon
Department of Environmental Quality

Memorandum[†]

Date: March 28, 1995

To: Environmental Quality Commission
From: Lydia Taylor, Interim Director 
Subject: Agenda Item G, April 14, 1995, EQC Meeting

Proposed Amendments to the Memorandum of Agreement between the EQC and Oregon Department of Agriculture pertaining to management of CAFO facilities

STATEMENT OF THE ISSUE

The Department requests that the Environmental Quality Commission (EQC) amend the Memorandum of Agreement between the EQC and the Oregon Department of Agriculture (ODA) dated February 14, 1994. The Agreement provides for the ODA to operate a program for the prevention and control of water pollution from confined animal feeding operations (CAFOs).

The DEQ and ODA have shared regulatory responsibility for management of CAFO facilities. As outlined in the existing Memorandum of Agreement between the EQC and ODA, the ODA provides technical assistance to CAFO owners and operators, and manages CAFO facilities covered by the general permit, including enforcement. The DEQ manages CAFOs with individual permits, recommends issuance of tax credit certificates, and undertakes enforcement actions for CAFOs operating with individual permits.

Recently enacted state law (Chapter 567 Oregon Laws 1993, SB 1008) requires the EQC and ODA to enter into a memorandum of understanding providing for ODA to operate a CAFO waste management program, allowing ODA to perform any function of the DEQ (including final enforcement actions) relating to CAFOs, and allowing the ODA to impose civil penalties on owners or operators of CAFO facilities for failure to comply with water quality requirements. The current Memorandum of Agreement does not fully satisfy the legislative intent of the 1993 law.

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

The amended Memorandum of Agreement (retitled Memorandum of Understanding) is contained in Attachment A of this report. The current Agreement is shown in Attachment B.

BACKGROUND

1. *CAFO defined.* A confined animal feeding operation (CAFO) is defined as the concentrated confined feeding or holding of animals or poultry, including, but not limited to, horse, cattle, sheep, or swine feeding areas, dairy confinement areas, slaughterhouse or shipping terminal holding pens, poultry and egg production facilities and fur farms, in buildings or in pens or lots where the surface has been prepared with concrete, rock or fibrous material to support animals in wet weather or which have waste water treatment works. (ORS 468B.205.) There are approximately 600 permitted CAFO facilities currently operating in the state.

Oregon statute sets policy such that animal wastes, including wastes from CAFO facilities, are prevented from discharging into the waters of the state. (ORS 468B.200.) DEQ rules set forth both requirements and policy for operation, maintenance, design and construction of CAFO facilities. (OAR Chapter 340, Division 51.) Further, Division 51, Section 020 requires that all CAFOs shall be constructed and operated such that all wastes emanating from the facility do not enter the waters of the state. Consequently, all CAFO permits have been issued under state rules for Water Pollution Control Facilities (WPCF) permits, found in Oregon Administrative Rules, Chapter 340, Divisions 14 and 45.

2. *Permitting requirements for CAFO facilities.* There are two WPCF permit categories for CAFO facilities: individual permits and the general permit.

Individual WPCF permits are written specifically for a named CAFO facility, and the permit contains effluent limits and monitoring requirements pertinent to that facility. Individual permits are issued to CAFO sources which require frequent compliance monitoring, such as those producing high volumes of effluent, or high concentrations of pollutants, or those having unique groundwater monitoring requirements. Individual permits may also be issued to facilities which have experienced problems with compliance. There are currently three CAFO facilities operating under individual permits: Mallorie's Dairy, Silverton; Simplot Feedlot #4, Boardman; and Mill Creek Correctional Facility, Salem. The DEQ currently processes applications, issues and administers individual WPCF permits, and undertakes enforcement actions relating to CAFOs with individual WPCF permits.

The amended Memorandum of Agreement will transfer this responsibility to ODA.

General permits are not written for a specific source, but rather cover general requirements for facilities or operations with common discharge characteristics. The bulk of CAFO facilities in the state (about 595) are operating under General Permit 800, which covers any confined animal feeding operation employing land application methods for disposal of waste. The general permit prohibits discharge of wastes to any public waters (groundwater or surface water), and requires land application at agronomic rates.

A CAFO may be assigned coverage under the general permit by making application to ODA and providing sufficient documentation demonstrating compliance with general permit conditions. The ODA assigns in the permit the maximum number of animals allowed to be confined at a given location. The ODA is responsible for enforcement matters relative to CAFOs covered by the general permit.

By rule, CAFO permits do not expire; however such permits may be revoked or modified by the Director of DEQ (and now ODA), or may be terminated at the request of the permit holder. (OAR 340-14-015(2).)

3. *Previous Statutes and Interagency Agreements relating to CAFOs.* The CAFO program appears to date back to administrative rules adopted in 1972. The Oregon legislature enacted CAFO statutes in 1989, serving to codify the existing regulatory program. The 1989 laws gave authority to ODA to inspect permitted operations, and to collect annual fees. Both agencies were allowed to take any actions necessary to implement the 1989 statutes.

Historically, DEQ cooperated with the ODA in the administration of the CAFO program. The Department and ODA formally entered into a Memorandum of Agreement (MOA) on October 19, 1988. This MOA established responsibilities, procedures, and authorities for administering a statewide CAFO waste management program. The agreement authorized ODA to act as an agent for the Department for overseeing facilities covered by the general permit. The 1988 agreement also conveyed authority to ODA for approving plans and specifications for construction or modification of CAFO facilities, for providing information about tax credits, and for compliance assurance.

The state's statutes did not allow ODA to have responsibility for final enforcement matters, and only DEQ had civil penalty authority.

4. *Recent Statutory Changes.* The 1988 MOA remained in effect until 1993, when the State Legislature passed Senate Bill 1008, enacting Chapter 567 Oregon Laws 1993 relating to confined animal feeding operations, and appropriating money to ODA for operating the CAFO program. (Senate Bill 1008 was enacted at the request of the Oregon Dairy Farmers' Association, along with companion bill SB 1010, authorizing ODA to adopt and enforce agricultural water quality management plans.) The new law added language to Oregon Revised Statutes (ORS) 468B.200 to 468B.220, as follows:
 - a. By January 1, 1994, requiring the EQC and ODA to enter into a Memorandum of Understanding (MOU) authorizing the ODA to operate a program for the prevention and control water pollution from CAFO facilities;
 - b. Subject to the terms of the MOU, the ODA may perform any function (including final enforcement actions) of the EQC or DEQ relating to the control and prevention of water pollution from a CAFO, and may enter onto and inspect a CAFO for the purposes of investigating compliance;
 - c. The ODA may impose civil penalties on the owner or operator of a CAFO for failure to comply with water quality statutes, rules, or permits; setting limits for penalties; and suggesting items for consideration when imposing civil penalties;
 - d. Appropriating general funds from the 93-95 biennium in the amount of \$54,826 to the ODA (equivalent to .5 FTE), with an equal sum reduced from the DEQ general fund appropriation.

(Chapter 567 Oregon Laws 1993 is included as Attachment C.)

5. *The Current Agreement.* As required by law, the EQC and ODA amended the 1988 agreement to incorporate provisions for ODA to act on behalf of the DEQ in undertaking enforcement actions and assessing civil penalties. This amended agreement was approved by the EQC at a regular meeting on January 28, 1994, and signed by the Directors of ODA and DEQ in February of 1994. (The agreement is included as Attachment B to this report).

The 1994 agreement required the ODA to adopt rules for enforcement actions and civil penalty schedules by July 1, 1994. This requirement has been completed; the ODA recently adopted rule amendments to Oregon Administrative Rules, Chapter 603, Division 74, Confined Animal Feeding Operation Program. Specific citations relative to enforcement and civil penalties are found at 603-74-010 through -080. Now that these rule amendments have been adopted, the DEQ and ODA are prepared to further refine the CAFO agreement to fulfill the legislative intent of the law; that is, to allow the ODA to assume full responsibility for administration of a statewide CAFO waste management program.

PROPOSED AMENDMENTS TO THE AGREEMENT

The 1994 agreement has been substantially revised to reflect changes necessary to allow transfer of Department responsibilities. Significant changes are as follows:

1. The agreement has been retitled "Memorandum of Understanding" (MOU) to be consistent with the enabling laws and statutes.
2. A section on definitions (Section III) has been added, to clarify terms and provide common frames of reference for purposes of the MOU, permit program management, and enforcement actions.
3. The section on Permit Program Procedures (Section VI) has been expanded to include provisions for ODA management of individual WPCF permits, including criteria for determining when an individual permit should be issued.
4. Section VII has been added specific to CAFOs located in water quality management and protection areas (such as groundwater management areas, wellhead protection areas, water quality limited (TMDL) streams, etc.) This section provides for joint DEQ/ODA development of CAFO management strategies for these specially designated areas.
5. Provisions allowing ODA to develop alternatives to DEQ permits has been added under Section VIII.
6. Section IX, Corrective Orders, has been expanded to cover procedures for both ODA-issued Corrective Orders, and DEQ-issued Stipulated and Final Orders (SFOs).

7. Provisions for responding to citizen complaints have been added to the sections covering ODA and DEQ responsibilities (Sections IV and V, respectively), and a new section created specifically relating to coordination of emergency response (Section XI). The MOU establishes the ODA as the agency with first responsibility for responding to, investigating, and resolving citizen complaints. The DEQ will refer complaints to ODA, but will help coordinate activities in the event that a CAFO release poses immediate risks to public health or the environment.
8. Section XIV lists the individual permits that will be transferred to ODA oversight after the DEQ and ODA have conducted joint inspections and consultation. The inspections and consultations for transfer are scheduled to be completed by July 1, 1995.
9. A section on limitations has been included (Section XV).
10. Section XVI, Amendments and Termination, has been added, including provision for the Director of DEQ to authorize administrative modifications to the MOU on behalf of the Commission.

AUTHORITY TO ADDRESS THE ISSUE

Oregon water quality statutes, ORS 468B.200 through ORS 468B.230 (as amended by Chapter 567 Oregon Laws 1993) authorize the EQC and ODA to enter into a Memorandum of Understanding wherein the EQC conveys to ODA responsibility and authority for operating a statewide program to prevent and control water pollution from CAFO facilities.

ALTERNATIVES AND EVALUATION

Alternative 1: Take no action, do not amend the current Memorandum of Agreement.

This alternative was rejected. The 1993 legislative action clearly allows transfer from DEQ to ODA administrative authority for operation of a CAFO waste management program. As currently written, the 1994 agreement does not fully satisfy this legislative intent.

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April 14, 1995 Meeting
Page 7

Alternative 2: Amend the current Memorandum of Agreement as proposed in Attachment A of this report.

The proposed amendments were developed through several meetings and consultations with ODA and DEQ staff. This alternative is consistent with legislative intent, and represents the most favorable arrangement between the two agencies for operating the statewide CAFO program.

SUMMARY OF ANY PRIOR PUBLIC INPUT OPPORTUNITY

Previous versions of the Memorandum of Agreement were developed in consultation with the ODA CAFO Advisory Committee, including the current Agreement which was entered into in 1994 as required by the new law (SB 1008). The proposed revisions to the 1994 Agreement (renamed Memorandum of Understanding, or MOU) were prepared through negotiations between DEQ and ODA representatives. The ODA CAFO Advisory Committee membership has been made aware of the proposed MOU.

A copy of the MOU was sent to Rick Gove, a representative for Northwest Environmental Defense Center (NEDC), for review and comment prior to submission of this report to the EQC. The NEDC representative indicated that his organization was particularly concerned about how the two agencies would coordinate response to citizen complaints and emergency situations involving CAFO facilities.

RECOMMENDATION FOR COMMISSION ACTION

It is recommended that the Commission enter into the proposed Memorandum of Understanding (MOU) with the Oregon Department of Agriculture so that the ODA may assume full responsibility for operating a statewide program to prevent and control water pollution from confined animal feeding operations (CAFOs). It is further recommended that the EQC authorize the Director to sign the MOU on behalf of the EQC. The proposed MOU is included as Attachment A of this report.

ATTACHMENTS

- A. Proposed Memorandum of Understanding
- B. Current Memorandum of Agreement dated February 14, 1994
- C. Chapter 567 Oregon Laws 1993

Memo To: Environmental Quality Commission
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Page 8

REFERENCE DOCUMENTS (AVAILABLE UPON REQUEST)

1. ORS 468 and 468B
2. OAR 340-14, 340-45, 340-51, 603-74
3. Superseded Memorandum of Agreement dated October 19, 1988
4. Water Pollution Control Facility (WPCF) General Permit 0800

Approved:

Section:

Thomas J. Lucas

Division:

Michael Horns

Report Prepared By: Janice M. Renfroe

Phone: (503)229-5589

Date Prepared: March 21, 1995

JMR:crw
GW\WC13\WC13360.5
28 Mar 95

MEMORANDUM OF UNDERSTANDING BETWEEN
THE ENVIRONMENTAL QUALITY COMMISSION (EQC)
AND
OREGON DEPARTMENT OF AGRICULTURE (ODA)
FOR
PREVENTING AND CONTROLLING WATER POLLUTION
FROM CAFO FACILITIES

I. PURPOSE

In accordance with ORS 190.110 and ORS 468.015, this Memorandum of Understanding (MOU) sets forth the roles and responsibilities of the Department of Environmental Quality (DEQ), as directed by the Environmental Quality Commission (EQC), and the Oregon Department of Agriculture (ODA), for managing a statewide Confined Animal Feeding Operation (CAFO) waste management program.

II. IT IS MUTUALLY AGREED BY ALL PARTIES THAT:

- A. The ODA has an existing framework for working directly with the agricultural community to identify and implement conservation practices, and
- B. The ODA has extensive knowledge and experience in delivering information to the agricultural community, and
- C. Through Oregon Revised Statutes Chapter 468 and 468B, the DEQ has been designated the state agency responsible for preventing water pollution in the state from all sources, including CAFO facilities, and
- D. The statutory framework for the water pollution control program includes, in part, reviewing plans for waste disposal systems, issuing permits for waste disposal systems, and evaluating tax credit applications for water pollution control facilities, and
- E. ORS 468.035(c) authorizes DEQ to advise, consult, and cooperate with other agencies of the state with respect to all matters pertaining to the prevention and control of water pollution, and
- F. ORS 468B.217 requires the EQC and the ODA and to enter into a Memorandum of Understanding authorizing the ODA to operate a program to prevent and control water pollution from CAFOs, and authorizing ODA to perform any function of the EQC and DEQ in this capacity,
- G. ORS 468B.230 authorizes the ODA to enforce certain provisions and impose civil penalties on owners or operators of CAFOs for failure to comply with pertinent laws, rules, or permit requirements,

THEREFORE, through mutual agreement, the DEQ (as directed by the EQC) and ODA herein establish the following definitions, procedures and responsibilities to administer a statewide CAFO program.

III. DEFINITIONS.

For the purposes of this Memorandum of Understanding, permit program and enforcement activities, the following terms shall be defined as follows:

- A. *Agronomic rate of application*--a rate of applying animal waste to land such that the application matches the nutrient requirements of the crop cover on the site on an annual basis; however, as normally provided in permit conditions, such application of wastewater distributed on land for dissipation by evapotranspiration shall be at locations, at a time, and in a manner such that no contamination or impairment to designated beneficial uses of public waters is caused by runoff, seepage, or other means.
- B. *Animal Waste Control Facility*--all or any part of a system or systems used in connection with a confined animal feeding or holding operation for the (a) control of drainage; (b) collection, retention, treatment, and disposal of liquid waste or contaminated drainage waters; or (c) collection, handling, storage, treatment, or processing and disposing of manure.
- C. *Animal Waste Management System Plan*--pursuant to OAR 340-51-020, a facility-specific management plan as outlined in the *Oregon Animal Waste Installation Guidebook* and which includes: (a) a general description of the operation; (b) a detailed operation and maintenance plan and pertinent plans, specifications, and site drawings; (c) inventory data; (d) animal waste volume computations; and (d) inspection plans. The animal waste management system plan may also include groundwater monitoring requirements specified in OAR 340-40-030(a).
- D. *Beneficial use(s)*--those uses designated in water quality standards in OAR 340-41-026 through -975. For groundwater, the most important designated beneficial use is for public and private drinking water supplies; however, other beneficial uses may include industrial supplies, livestock watering, and as a base flow to surface waters.

Groundwaters which are known or assumed to be of high quality and which quality may naturally exceed the levels necessary to support beneficial uses (especially drinking water) shall be maintained at that level, unless otherwise allowed by variance (Refer to 340-40, Groundwater Quality Protection).

- E. *Best Management Practices (BMPs)*--effective and expedient methods, measures or practices including but not limited to schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent, reduce or control the pollution of waters of the state. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leakage, sludge or waste disposal, or drainage from raw material storage. BMPs may be applied before, during, and after pollution-producing activities to reduce or eliminate the introduction of pollutants into waters of the state.
- F. *Confined Animal Feeding Operation (CAFO)*--shall have the meaning given in ORS 468B.205; that is, the concentrated confined feeding or holding of animals or poultry, including but not limited to horse, cattle, sheep or swine feeding areas, dairy confinement areas, slaughterhouses or shipping terminal holding pens, poultry or egg production facilities, and fur farms, in buildings or in pens or lots where the surface has been prepared with concrete, rock or fibrous material to support animals in wet weather or which have waste water treatment works.
- G. *Corrective Order or Order*-- shall have the meaning given in ORS 183.310(5). An Order means any ODA or DEQ action expressed orally or in writing directed to a CAFO owner or operator, issued pursuant to OAR 603-74-040, or OAR 340-12-041.
- H. *Discharge or Disposal*--means the placement of wastes into public waters, on land, or otherwise into the environment in a manner that does or may tend to affect the quality of public waters.
- I. *General Permit*--a permit issued to a category of qualifying sources pursuant to OAR 340-45-033. A general permit is assigned to a qualified source in lieu of an individual permit written specifically for a particular facility.

- J. *Land Use Compatibility Statement (LUCS)*--a statement submitted by a permit applicant which provides information on activities that may significantly affect land use. The information contained in the statement assists the reviewing agency in determining whether an existing or proposed activity will comply with statewide land use goals, and that the activity is compatible with acknowledged comprehensive plans. (Reference to ORS 197.180)
- K. *Nonpoint source*--means diffuse or unconfined sources of pollution where contaminants may either enter public waters, or be conveyed by the movement of water to public waters.
- L. *Point source*--any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, or confined animal feeding operation from which pollutants are or may be discharged.
- M. *Pollutant or water pollution*--human-made or human induced alteration of the chemical, physical, biological, or radiological integrity of water; and as further defined in ORS 468B.005(3) and OAR 340-45-010(13).
- N. *Waste or wastes*--means sewage (including animal waste) and all other liquid, gaseous, solid, radioactive, or other substances which will or may cause pollution to waters of the state.
- O. *Waters, public waters or waters of the State*--shall have the meaning given in ORS 468B.005(8), which includes groundwater.
- P. *WPCF Permit*--a Water Pollution Control Facilities permit to construct or operate an animal waste disposal system which has no discharge to navigable waters. An individual WPCF permit is written for and issued to a specific facility by the authorized state agency in accordance with the procedures set forth in OAR 340-14-005 through 340-14-050.

IV. ODA DESIGNATED RESPONSIBILITIES:

The ODA agrees to:

- A. Conduct an education program for CAFO operators in cooperation with the OSU Cooperative Extension Service to impart Best Management Practices (BMPs) for animal waste control facilities.
- B. Advise CAFO owner/operators about available state, federal, and private sources of technical and financial assistance for planning, designing, and implementing appropriate BMPs for animal waste management systems.
- C. Act as DEQ's agent in receiving and reviewing registration/application forms for coverage under the CAFO general permit (General Permit Category 0800), and assigning coverage by general permit to those applicant CAFO facilities which qualify, in accordance with detailed procedures described in Section VI. A., which follows.
- D. Act as DEQ's agent in receiving and reviewing permit application forms and plans for existing or new proposed CAFO facilities, and issuing individual permits, if necessary, in accordance with procedures in Section VI. B. of this document. This would include applications from CAFOs previously operating under the general permit.
- E. Review for approval or rejection animal waste management system plans and specifications for animal waste control facilities to verify the plans and specifications have been prepared pursuant to OAR 340-51 and the *Oregon Animal Waste Installation Guidebook* design criteria, in accordance with Section X of this document. Prior to approval and if appropriate, the ODA may request that the DEQ review plans and specifications for construction, modification, or expansion of CAFOs to determine whether the proposed construction conforms with groundwater protection requirements. The ODA may also request that DEQ review plans and specifications for CAFO systems not covered by Division 51 or the design guide, such as mechanical treatment systems, or subsurface disposal systems.

- F. Strive to conduct at least one inspection per year for those CAFOs which have individual permits, or Corrective Orders in addition to their permit, and at least one inspection every five years for CAFOs under general permit.
- G. Respond promptly to citizen complaints pertaining to the operation of CAFO facilities. The ODA has first responsibility for response to complaints received from the public, and for investigation of known or suspected violations of laws, rules, orders, permits, or water quality standards associated with CAFO facilities. The ODA may negotiate separate agreements with Soil and Water Conservation Districts for complaint investigation and response.
- H. Negotiate with a permittee the terms and conditions to be included in a Corrective Order for CAFOs not in compliance with the conditions of the wastewater permit. The ODA will issue a unilateral Corrective Order when a negotiated Order cannot be achieved. The Corrective Order shall be in addition to the wastewater permit and not in lieu of it. The Corrective Order shall be issued by the ODA and signed by the Director of ODA or a designee.
- I. Take prompt enforcement action when CAFO facilities violate permit conditions, water quality statutes, rules or orders in accordance with ODA enforcement procedures. For non-CAFO livestock operations, the ODA may refer unresolvable complaints and violations to DEQ for investigation and enforcement.
- J. Impose civil penalties, when appropriate, on the owner or operator of a CAFO facility for failure to comply with the provisions of ORS 468 or 468B, or any rules adopted thereunder, or for violations of a permit issued pursuant to ORS 468B, relating to the prevention and control of water pollution from a CAFO, subject to the provisions for civil penalties contained in ORS 183.415 and ORS 468B.230.
- K. Develop and maintain a program database on all permit activities, and provide to EQC or DEQ, when requested, a report on the status of CAFO permits, complaint investigations, corrective orders, enforcement actions, and civil penalties imposed.

V. DEQ RESPONSIBILITIES

The DEQ agrees to:

- A. Provide advice, assistance, training, and program guidance relative to surface and ground water quality problems associated with animal waste, including but not limited to groundwater protection and monitoring requirements, permit writing, lagoon leakage testing, annual compliance inspections, data analysis, and sampling parameters and protocols.
- B. Recommend to EQC the issuance of tax credit certificates in accordance with procedures described in Section XII, below.
- C. Retain administrative oversight for the three existing individual permits until these permits are transferred to ODA oversight in accordance with the schedule contained in Section XIV, below.
- D. Retain enforcement responsibilities for existing individual permits (until transferred to ODA), and for other non-CAFO livestock operations.
- E. Refer all water pollution citizen complaints received on CAFOs and information regarding suspected violations of permits, rules, or water quality standards by CAFOs to ODA for investigation and follow-up, excepting those permits for which oversight has not yet been transferred to ODA.

VI. PERMIT PROGRAM PROCEDURES

- A. General Permit (0800).
 1. The ODA will distribute application forms to CAFO facilities which need to be covered by the general permit (Formally called General Permit 0800, WPCF Permit, covering any CAFO with a wastewater disposal system), unless ODA determines that an individual WPCF permit for the particular CAFO facility is necessary. Applications for general permits shall include pertinent general information and description of the activity, and if appropriate, a LUCS, an animal waste management system plan, and detailed plans and specifications.

2. Upon receipt of an application, the ODA will screen it for completeness, review the application to determine if the CAFO qualifies for a general permit, assign a maximum number of animals, and then assign coverage by the general permit if appropriate.
3. Facilities which would otherwise qualify for coverage by the general permit, but for whatever reason cannot immediately comply with all provisions, shall be issued a Corrective Order by ODA in addition to general permit coverage.
4. As allowed by statute and by this MOU, the ODA may perform any function of the EQC or DEQ relating to the control and prevention of water pollution from a CAFO. The ODA may on behalf of EQC and DEQ, modify, or revoke the general permit (General Permit 800), or issue new general permits in accordance with the requirements of OAR 340-45-033.
5. Fees for processing general permits may be charged in accordance with the fee schedule in OAR 340-45-075, and collected by the ODA.

B. Individual Water Pollution Control Facilities (WPCF) Permits

1. CAFO facilities which meet the following criteria shall be issued individual permits by the ODA:
 - a. for new CAFOs, if the proposed facility or system design cannot meet the requirements of the general permit; or
 - b. if the CAFO is not in compliance with conditions of the general permit, and ODA determines that resolution would take more than 2 years; or
 - c. if the ODA determines that the CAFO needs to monitor the waste management system or its environment and provide periodic reports to ODA to demonstrate compliance with water quality requirements; or

- d. for systems with treatment lagoons, if there is evidence that the lagoon leakage rate exceeds 1/8 inches per day, as evidenced by a DEQ acceptable leakage test; or
 - e. if groundwater quality monitoring data indicates that the CAFO adversely affects groundwater quality or surface waters into which the groundwater discharges; or
 - f. if the CAFO employs unconventional, experimental or unproven treatment methods (including constructed wetlands, mechanical treatment, or subsurface disposal systems), which require monitoring and periodic reporting to ensure proper performance and compliance with water quality requirements.
2. CAFOs which meet the criteria of Section VI.B.1.d. and e., above, or any CAFOs which are otherwise known or presumed to adversely impact groundwater quality, shall be issued individual permits containing requirements for performing hydrogeologic characterizations of groundwater. The hydrogeologic characterizations shall be completed in accordance with DEQ guidelines. If the hydrogeologic characterization indicates that the CAFO has the potential to adversely impact groundwater quality, then the CAFO shall be required to develop and undertake a groundwater monitoring program, and the permit will include specific groundwater concentration limits, pursuant to OAR 340-40-030.
 3. Individual WPCF permit application forms will be distributed by the ODA, and the application instructions shall include requirements for inclusion of a general description of the activity, relevant exhibits and supporting information; and a LUCS. The ODA will accept applications, review information, and follow the procedures set forth in OAR 340-14-005 through 045 for the issuance, renewal, modification, denial, revocation, transfer, and suspension of WPCF permits. Fees for processing individual permits may be charged in accordance with OAR 340-45-075, and collected by the ODA.

VII. CAFOS LOCATED IN WATER QUALITY MANAGEMENT AND PROTECTION AREAS

- A. Some CAFOs are now or may in the future be located in areas specially designated for water quality protection, such as groundwater management areas, wellhead protection areas, or a water quality management areas (e. g. Total Maximum Daily Loads (TMDLs) for surface water). To manage CAFO facilities in these areas, the ODA shall work with the DEQ to develop CAFO management strategies for the designated area, and the ODA shall be responsible for implementing the strategies.
- B. A management strategy may include, but not be limited to, compiling an inventory of CAFOs, inspection of all CAFO facilities in the area, establishing BMPs pertinent to the affected area, and working with area advisory committees to co-develop CAFO pollution prevention and control action plans and schedules. If CAFOs are determined to contribute to parameters of concern or otherwise adversely impact beneficial uses within a specially designated area, the management strategy may include provisions for more frequent source monitoring and inspection, more stringent permit conditions, enforceable animal waste management system plans for all CAFOs, issuing a general permit specific to the area, or requiring individual permits.

VIII. ALTERNATIVE PERMITS

- A. The ODA may develop and implement an alternative permit for CAFOs apart from the general permit (800) and individual WPCF permits. The permit would be developed in consultation with DEQ and in accordance with public information requirements. Alternative CAFO permits would provide enforceable conditions equivalent to the existing permitting program.
- B. The ODA shall be responsible for administration of the alternative permit and provide information as needed to the DEQ.

IX. CORRECTIVE ORDERS

- A. When a CAFO facility is not in compliance with the general permit or individual permit because of inadequate pollution control facilities, management, or waste disposal area, the ODA will issue a Notice of Noncompliance (NON) or

Corrective Order, pursuant to OAR 603-74-040. The NON may include a Corrective Order that specifies a schedule of actions to be taken. The NON and/or Order will be in addition to the general permit or individual permit, and will not replace it. The ODA will make reasonable attempts to negotiate a Corrective Order with the permittee; however, the Director of ODA or designee may issue a unilateral Corrective Order if a negotiated Order is not possible. The Director of ODA or designee will sign and issue the NON and/or Corrective Order to the permittee.

- B. Several CAFO facilities operating under the general permit have been issued Stipulated and Final Orders (SFOs) or Mutual Agreement and Orders (MAOs) by the DEQ. The ODA may act on behalf of the DEQ in enforcing all provisions of these orders until such time as the CAFO satisfies the conditions of the order, or the ODA and DEQ determine that the order should be replaced by a ODA-issued Corrective Order. If violation of a DEQ-issued order poses an immediate risk to public health or the environment, as determined by the ODA, the ODA may refer the violations to DEQ for enforcement.

X. PLANS AND SPECIFICATIONS REVIEW

- A. Oregon Revised Statutes (ORS) 468B.055 requires plans and specifications for water pollution control facilities to be reviewed by DEQ prior to construction, unless exempted from DEQ review by Commission rule, pursuant to OAR 340-52-045(3). The DEQ may exempt submittal of such plans where it has been determined that adequate review is conducted by another state agency. Pursuant to that rule, DEQ waives the requirement for plan submittal on animal waste control facilities where facilities have been designed and animal waste management system plans prepared in accordance with OAR 340-51 and the *Oregon Animal Waste Installation Guidebook* design criteria and so certified by ODA.
- B. The ODA may request technical assistance from the DEQ in the review of plans and specifications, particularly with regard to design criteria and requirements for mechanical treatment systems, subsurface disposal systems, constructed wetlands, and groundwater quality protection.

XI. COORDINATING EMERGENCY RESPONSE

- A. The ODA shall have the lead responsibility for responding to complaints and taking actions to address public concerns about CAFO facilities. When investigating citizen complaints about known or suspected releases of waste from a CAFO facility, the ODA shall obtain information about the material released, how the release occurred, actions underway to remediate the release, and potential for public health threat or environmental injury. If the ODA determines that public health or the environment may be harmed by releases from a CAFO facility, the ODA shall notify DEQ and other appropriate state and local authorities, and oversee efforts to obtain samples, clean up the site, or contain the release, as necessary.
- B. The DEQ shall refer all citizen complaints pertaining to CAFO and other non-CAFO livestock operations to the ODA for investigation and follow-up. If a citizen complaint is received outside of normal business hours, and DEQ determines that no threat to public health or the environment exists, the DEQ shall document the complaint, and forward the documentation to ODA immediately next business day. If the DEQ determines that an emergency situation exists, the DEQ shall immediately contact the designated ODA representative to coordinate investigation and follow-up activities.

XII. TAX CREDITS

- A. Tax Credit Certification. The DEQ is responsible for the review of all tax credit applications for water pollution control facilities. The ODA will inform CAFOs of the opportunity for tax credits and the requirement to have plans approved prior to construction. If ODA reviews plans and specifications pursuant to Section X. above, and provides documentation of such to DEQ, the DEQ will accept that plan review as meeting the plan review requirements associated with tax credit certification without making an independent plan review.
- B. Certificates. When DEQ receives a request for a tax credit certificate, ODA will be requested to verify that the claimed facilities are in place and are working properly.

The ODA will provide such verification within 60 days of the request. Once verification has been received, the DEQ will review the application and prepare a recommendation for the Environmental Quality Commission.

XIII. COLLECTION AND DISTRIBUTION OF PERMIT FEES

- A. The ODA will use the fee schedules in OAR 340-45-075 and OAR 603-74-020 for general permit and individual WPCF permits. ODA will collect and retain all fees relating to the processing and assignment of coverage by general permits, and for those individual permits for which ODA has administrative oversight responsibilities.
- B. The DEQ will collect and retain fees for those existing individual permits not yet transferred to the ODA. Once the permit is transferred, the responsibilities for fee collection will be borne by the agency with oversight.

XIV. TRANSFER OF EXISTING INDIVIDUAL PERMITS

- A. The DEQ will transfer the three individual permits listed below to the ODA upon joint DEQ and ODA site inspection of each facility, and consultation between agencies to coordinate a smooth transition:
 - 1. J. R. Simplot Company
Simplot Feedlot #4
Morrow County, Oregon
WPCF Permit Number 100335
 - 2. Mallorie's Dairy
Silverton, Oregon
WPCF Permit Number 100457
 - 3. Oregon Dept of Corrections
Mill Creek Correctional Facility
Salem, Oregon
WPCF Permit Number 100240
- B. The joint DEQ/ODA inspections and consultations shall occur not later than July 1, 1995.

XV. LIMITATIONS

- A. Nothing in this MOU restricts the DEQ's right to inspect independently and take enforcement action on any source or suspected source of contamination or pollutant discharge; however, the DEQ recognizes that the ODA is the lead agency responsible for oversight of CAFO facilities and will exercise this right only in extraordinary circumstances.
- B. Nothing in this MOU constitutes or creates a valid defense to regulated parties operating in violation of environmental regulations, statutes, or permits.

XVI. AMENDMENTS AND TERMINATION

- A. This MOU may be modified at any time by mutual agreement of the parties. The Director of DEQ shall have authority to agree to amendments of an administrative nature on behalf of the Commission. Amendments or modifications with significant policy implications will be taken to the EQC for approval.
- B. Conveyance of jurisdiction in the administrative oversight of individual WPCF permits and the general permit is predicated upon the understanding that the ODA will provide equivalent and sustained protection of the environment. In the event that the ODA program fails to provide such protection, and upon mutual agreement of the ODA and the DEQ, then all or a portion of the CAFO program shall revert back to the DEQ.
- C. This MOU is in effect upon signature by all parties and will remain in effect until terminated by either agency, upon 180 days written notice, or until modified by mutual agreement.

STATE OF OREGON
DEPARTMENT OF AGRICULTURE

STATE OF OREGON
DEPT OF ENVIRONMENTAL QUALITY

AS APPROVED BY THE
ENVIRONMENTAL QUALITY
COMMISSION

Director

Director

Date

Date

MEMORANDUM OF AGREEMENT BETWEEN
THE ENVIRONMENTAL QUALITY COMMISSION (EQC)
AND
OREGON DEPARTMENT OF AGRICULTURE (ODA)
FOR
PERMITTING AND REGULATING CAFO FACILITIES

I. PURPOSE

In accordance with ORS 190.110 and ORS 468.015, this Memorandum of Agreement sets forth the roles and responsibilities of the Department of Environmental Quality (DEQ) as directed by the Environmental Quality Commission (EQC) and the Oregon Department of Agriculture (ODA), in managing and implementing a statewide Confined Animal Feeding Operation (CAFO) waste management program.

II. ROLES AND AUTHORITIES

- A. WHEREAS the ODA has an existing framework for working directly with the agricultural community to identify and implement conservation practices, and
- B. WHEREAS the ODA has extensive knowledge and experience in delivering information to the agricultural community, and
- C. WHEREAS, through Oregon Revised Statutes Chapter 468, the DEQ has been designated the state agency responsible for preventing water pollution in the state from all sources, including CAFO facilities, and
- D. WHEREAS the statutory framework for the water pollution control program includes, in part, reviewing plans for waste disposal systems, issuing permits for waste disposal systems, and evaluating tax credit applications for water pollution control facilities, and
- E. WHEREAS ORS 468.035 authorizes DEQ to advise, consult, and cooperate with other agencies of the state with respect to all matters pertaining to control of water pollution,
- G. WHEREAS Chapter 567 Oregon Laws 1993 authorizes ODA to perform any function of the EQC or the DEQ relating to the control and prevention of water pollution from a confined animal feeding operation,

THEREFORE, through mutual agreement, DEQ by policy direction from EQC and ODA have established following responsibilities in order to implement the CAFO program through a coordinated and mutually acceptable agreement.

III. ODA DESIGNATED RESPONSIBILITIES:

The ODA has these CAFO responsibilities:

- A. Conduct an education program in cooperation with the OSU Cooperative Extension Service (for CAFO operators) to describe Best Management Practices (BMPs) for animal waste disposal facilities.
- B. Advise CAFO owner/operators of available state, federal, and private sources of technical assistance for planning, designing, and implementation of appropriate BMPs which comprise an animal waste management system.
- C. Advise CAFO owner/operators of sources of financial assistance available from state and federal agencies to provide incentives for such CAFO operators in implementing approved BMPs for animal waste disposal systems.
- D. Act as DEQ's agent in receiving registration forms for coverage under the CAFO general permit and distribute copies of the general permit to those CAFO facilities which apply, in accordance with detailed procedures described in Section V. A., which follows.
- E. Act as DEQ's agent in receiving and reviewing permit application forms and plans for new proposed CAFO facilities, and distribute a general permit to the proposed facility, in accordance with procedures in Section V. B. of this document.
- F. Negotiate with a CAFO permittee the terms and conditions to be included in a Consent Order for those facilities which are not in compliance with the conditions of the DEQ general permit. The Consent Order would be in addition to the general permit and not in lieu of it. The Consent Order shall be issued by the Director of DEQ. After ODA enforcement rules are adopted pursuant to Section III. J., the Director of ODA or the Director's designee will sign and issue the Consent Order.

- G. Review for approval or rejection plans and specifications for CAFO waste collection and disposal systems to verify they have been prepared in accordance with the Oregon Animal Waste Installation Guidebook design criteria and certify such to DEQ in accordance with Section V. E. of this document.
- H. Respond to and resolve, where possible, all complaints or problems where no complaint has been received, associated with CAFOs and other livestock operations suspected violations of permits, orders, rules, or water quality standards. DEQ will respond to and resolve complaints on CAFO facilities which operate under an individual WPCF permit.
- I. Take prompt enforcement action against CAFO Facilities violating permit conditions, water quality statutes, rules or orders in accordance with ODA enforcement procedures.
- J. by July 1, 1994, adopt enforcement rules and civil penalty schedules in conformance with the provisions of Chapter 567 Oregon Laws 1993.
- K. Impose civil penalties on the owner or operator of a CAFO facility for failure to comply with the provisions of ORS Chapter 468 or 468B or any rules adopted under, or a permit issued under ORS Chapter 468B, relating to the control and prevention of water pollution from a CAFO.
- L. Provide DEQ with a quarterly update on the status of CAFO permits, orders, and complaint investigations, notices of noncompliance and civil penalties imposed.
- M. At least one inspection per year will be conducted by ODA on those CAFO facilities which have a Consent Order in addition to their permit, unless, by agreement, oversight has been retained by DEQ.

IV. DEQ RESPONSIBILITIES

The DEQ, through its regional offices and Water Quality Division, will provide the following support to the CAFO program:

- A. Provide advice, assistance, and program guidance relative to instream water quality problems associated with animal waste.

- B. Review and approve plans and specifications for construction, modification, and expansion of those CAFO facilities not reviewed by ODA under III. G., above.
- C. Recommend to EQC the issuance of tax credit certificates in accordance with procedures described in Section V. G.
- D. Issue Water Pollution Control Facilities Permits to CAFO facilities which are uniquely different, require special monitoring, or for some other reason should not be covered by a general permit.
- E. Refer all water pollution complaints received on CAFOs and information regarding other suspected violations of permits, rules, or water quality standards by CAFOs to ODA for investigation and follow-up, except for those facilities for which oversight has been retained by DEQ.
- F. Until ODA's enforcement rules are adopted pursuant to Section III.J., DEQ will take prompt enforcement action against CAFO facilities violating permit conditions or water quality statutes or rules or orders. DEQ will retain enforcement responsibilities for facilities which have remained under DEQ individual WPCF permit or other livestock operations where verified violations or water quality problems have been referred to DEQ by ODA for enforcement action because the process of soliciting voluntary compliance has failed.
- G. At least one inspection per year will be conducted by DEQ on those CAFO facilities issued with individual WPCF permits.

V. DETAILED PROGRAM PROCEDURES

A. General Permit Distribution to Existing Facilities.

The ODA will distribute registration/applications to CAFO facilities which need to be covered by the general permit, unless it is determined by DEQ and ODA that an individual WPCF permit for the particular CAFO facility is necessary. After the applications have been received, the ODA will screen them to determine which CAFO facilities already have adequate pollution control facilities or which ones should be issued a Consent Order along with the general permit. The ODA will distribute a copy of the general permit and issue a Consent Order, where appropriate.

Prior to distributing a copy of the general permit, the ODA will forward a copy of the application to DEQ for assignment of a facility identification number and logging the facility into the DEQ data system. The ODA will put a label on each copy of the general permit being distributed which contains the name of the applicant, the DEQ generated identification number and the address of the facility. A copy of the completed first page of each permit will be sent to DEQ for their files. A printout of all CAFO facilities to which permits have been issued will be prepared by DEQ and sent to ODA quarterly.

B. Permits for New CAFO Facilities.

New CAFO facilities may also be eligible for coverage by the general permit. However, the application will include a Land Use Compatibility Statement, facility and waste management plans. The fees for a new facility application will include a permit processing fee. The application and fees will be collected by the ODA. A copy of the application and Land Use Compatibility Statement will be sent to DEQ. Once the application, including construction plans and waste management program have been approved by ODA and any necessary public participation procedures have been completed, the ODA may distribute a general permit to the applicant. A Copy of the completed first page will be sent to DEQ.

C. Individual Water Pollution Control Facilities (WPCF) Permit Issuance.

Those few CAFO facilities which are uniquely different, need groundwater monitoring, or for some other reason should not be covered by the general permit, will be issued an individual permit by the DEQ. Permit application forms will be distributed by DEQ and the permitting process will follow standard DEQ procedures. These facilities will continue to be carried under DEQ oversight for inspection and enforcement.

D. Issuance of DEQ Consent Orders.

Where a CAFO facility is not in compliance with the general permit because of inadequate pollution control facilities, management, or waste disposal area, the DEQ will propose an Consent Order which will specify the corrections to be made and the time schedule to make them. The Consent Order will be in addition to the general permit and will not replace it. The ODA will negotiate with the permittee and make recommendations to the DEQ on the issues and time schedules

to be addressed in the Consent Order. After the ODA has arranged for the permittee to sign the Consent Order, it will be sent to the DEQ Director for signature. It will then be delivered to the permittee by ODA. After ODA enforcement rules are adopted pursuant to Section III. J., the Director of ODA or the Director's designee will sign and issue the Consent Order.

E. Plan Review for CAFO Pollution Control Facilities.

Oregon Revised Statutes (ORS) 468B.055 requires plans and specifications for water pollution control facilities to be reviewed by DEQ prior to construction, unless exempted from DEQ review by Commission rule, pursuant to OAR 340-52-045(3), the DEQ may exempt submittal of plans where it has been determined that adequate review is conducted by another state agency. Pursuant to that rule, DEQ waives the requirement for plan submittal on CAFO waste water collection and disposal facilities where facilities have been designed in accordance with the Oregon Animal Waste Installation Guidebook design criteria and so certified by ODA. ODA will inform DEQ and certify whether or not the plans and specifications adhere to the Oregon Animal Waste Installation Guidebook design criteria or equivalent.

F. Tax Credit Preliminary Certification.

The DEQ is responsible for the review of all tax credit applications for water pollution control facilities. The ODA should inform CAFOs of the opportunity for tax credits and the requirement to have plans approved prior to construction. If ODA reviews plans and specifications pursuant to E. above, and provides documentation of such to DEQ, the DEQ will accept that plan review as meeting the plan review requirements associated with tax credit certification without making an independent plan review.

G. Tax Credit Certificates.

When DEQ receives a request for a tax credit certificate, ODA will be requested to verify that the claimed facilities are in place and are working properly. The ODA will provide that verification within 60 days of the request. Once that verification has been received, the DEQ will review the application and prepare a recommendation for the Environmental Quality Commission.

H. Collection and Distribution of Permit Fees.


A filing fee is required of all facilities requesting a permit. The ODA will collect and retain all filing fees from those existing CAFO facilities which register for coverage by the general permit.

In addition to the filing fee, an application processing fee is required of all applicants for new proposed facilities. The ODA will collect and retain the application processing fee for those facilities which will be covered by the general permit. If ODA and DEQ determine that the proposed facility is unique or for some other reason does not fit the requirements of the general permit, the application and all fees will be transferred to DEQ for the issuance of an individual permit.

Those facilities with individual WPCF permits must also pay an annual compliance determination fee. The DEQ will collect the fees through their existing annual invoicing procedures.

VI. This Memorandum of Agreement is in effect upon all signatures and will remain in effect until terminated by either agency, upon 180 days notice, or until modified by mutual agreement.

STATE OF OREGON
DEPARTMENT OF AGRICULTURE

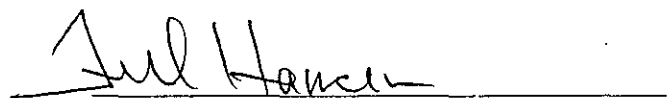


Director

2-4-94
Date

STATE OF OREGON
ENVIRONMENTAL QUALITY
COMMISSION

APPROVED BY THE ENVIRONMENTAL
QUALITY COMMISSION



Director

FEB 14 1994
Date

ments of 1990, 42 U.S.C. 7545(m), any retail dealer of gasoline who sells or dispenses a petroleum product that contains at least one percent, by volume, ethanol, methanol or other oxygenate, shall be required to post only such label or notice as may be required pursuant to 42 U.S.C. 7545(m)(4) or any amendments thereto or successor provision thereof.

Approved by the Governor August 2, 1993

Filed in the office of Secretary of State August 2, 1993

Effective date - Regular effective date

CHAPTER 567

AN ACT

SB 1008

Relating to confined animal feeding operations; and appropriating money.

Be It Enacted by the People of the State of Oregon:

SECTION 1. Sections 2 and 3 of this Act are added to and made a part of ORS 468B.200 to 468B.220.

SECTION 2. (1) On or before January 1, 1994, the Environmental Quality Commission and the State Department of Agriculture shall enter into a memorandum of understanding providing for the State Department of Agriculture to operate a program for the prevention and control of water pollution from a confined animal feeding operation.

(2) Subject to the terms of the memorandum of understanding required by subsection (1) of this section, the State Department of Agriculture:

(a) May perform any function of the Environmental Quality Commission or the Department of Environmental Quality relating to the control and prevention of water pollution from a confined animal feeding operation.

(b) May enter onto and inspect, at any reasonable time, a confined animal feeding operation or appurtenant land for the purpose of investigating a source of water pollution or to ascertain compliance with a statute, rule, standard or permit condition relating to the control or prevention of water pollution from the operation. The State Department of Agriculture shall have access to a pertinent record of a confined animal feeding operation including but not limited to a blueprint, design drawing and specification, maintenance record or log, or an operating rule, procedure or plan.

SECTION 3. (1) In addition to any liability or penalty provided by law, the State Department of Agriculture may impose a civil penalty on the owner or operator of a confined animal feeding operation for failure to comply with a provision of ORS chapter 468 or 468B or any rule

adopted under, or a permit issued under ORS chapter 468 or 468B, relating to the control and prevention of water pollution from a confined animal feeding operation. For the purposes of this section, each day a violation continues after the period of time established for compliance shall be considered a separate violation unless the State Department of Agriculture finds that a different period of time is more appropriate to describe a specific violation event.

(2) The State Department of Agriculture may not impose a civil penalty under subsection (1) of this section for a first violation by an owner or operator of a confined animal feeding operation:

(a) That is more than \$2,500; and

(b) Unless the State Department of Agriculture notifies the violator that the violation must be eliminated no later than 30 business days from the date the violator receives the notice. If the violation requires more than 30 days to correct, the State Department of Agriculture may allow such time as is necessary to correct the violation. In all cases, the legal owner of the property shall also be notified, prior to the assessment of any civil penalty.

(3) The State Department of Agriculture may not impose a civil penalty under subsection (1) of this section that exceeds \$10,000 for a subsequent violation.

(4) In imposing a civil penalty under this section, the State Department of Agriculture may consider:

(a) The past history of the owner or operator in taking all feasible steps or procedures necessary and appropriate to correct a violation.

(b) A past violation of a rule or statute relating to a water quality plan.

(c) The gravity and magnitude of the violation.

(d) Whether the violation was a sole event, repeated or continuous.

(e) Whether the cause of the violation was as a result of an unavoidable accident, negligence or an intentional act.

(f) Whether the owner or operator cooperated in an effort to correct the violation.

(g) The extent to which the violation threatens the public health and safety.

(5) No notice of violation or period for compliance shall be required under subsection (2) of this section if:

(a) The violation is intentional; or

(b) The owner or operator has received a previous notice of the same or similar violation.

(6) A civil penalty collected by the State Department of Agriculture under this section shall be deposited into a special subaccount in the Department of Agriculture Service Fund. Monies in the subaccount are continuously appropriated to the department to be used for educational programs on animal waste manage-

ment and to carry out animal waste management demonstration or research projects.

(7) Any civil penalty imposed under this section shall be reduced by the amount of any civil penalty imposed by the Environmental Quality Commission, the Department of Environmental Quality or the United States Environmental Protection Agency, if the latter penalties are imposed on the same person and are based on the same violation.

SECTION 4. In addition to and not in lieu of other appropriations, for the biennium beginning July 1, 1993, there is appropriated to the State Department of Agriculture, out of the General Fund, the sum of \$54,826 for Agricultural Services. However, except as provided in ORS 291.254, the Executive Department shall not reduce the appropriations made by this Act by means of the allotment system if such action materially reduces the program or service levels below legislatively established levels for which funds were appropriated.

SECTION 5. Notwithstanding any other law appropriating money or otherwise adjusting appropriations, the General Fund appropriation for the Department of Environmental Quality authorized in section 1, chapter _____, Oregon Laws 1993 (Enrolled House Bill 5022), is reduced by \$54,826 for the biennium beginning July 1, 1993.

Approved by the Governor August 2, 1993
 Filed in the office of Secretary of State August 2, 1993
 Effective date - Regular effective date

CHAPTER 568

AN ACT SB 1009

Relating to determination of compliance with record keeping requirements; creating new provisions; and amending ORS 459A.650, 459A.655 and 459A.660.

Be It Enacted by the People of the State of Oregon:

SECTION 1. ORS 459A.650 is amended to read: 459A.650. As used in ORS 459A.650 to 459A.665:

(1) "Department" means the Department of Environmental Quality.

[(2) "Manufacturer" means the producer or generator of a packaged product which is sold or offered for sale in Oregon in a rigid plastic container.]

[(3)] (2) "Package" means any container used to protect, store, contain, transport, display or sell products.

(3) "Package manufacturer" means the producer or generator of a rigid plastic container for a packaged product that is sold or offered for sale in Oregon.

(4) "Product-associated package" means a brand-specific rigid plastic container line, which may have one or more sizes, shapes or designs and which is used in conjunction with a particular, generic product line.

(5) "Product manufacturer" means the producer or generator of a packaged product that is sold or offered for sale in Oregon in a rigid plastic container.

[(5)] (6) "Recycled content" means the portion of a package's weight that is composed of recycled material, as determined by a material balance approach that calculates total recycled material input as a percentage of total material input in the manufacture of the package.

[(6)] (7) "Recycled material" means a material that would otherwise be destined for solid waste disposal, having completed its intended end use or product life cycle. Recycled material does not include materials and by-products generated from, and commonly reused within, an original manufacturing and fabrication process.

[(7)] (8) "Reusable package" means a package that is used five or more times for the same or substantially similar use.

[(8)] (9) "Rigid plastic container" means any package composed predominantly of plastic resin which has a relatively inflexible finite shape or form with a minimum capacity of eight ounces and a maximum capacity of five gallons, and that is capable of maintaining its shape while holding other products.

SECTION 2. ORS 459A.655 is amended to read:

459A.655. (1) Except as provided in ORS 459A.660 [(3)] (5), [every manufacturer of] any rigid plastic [containers] container sold, offered for sale or used in association with the sale or offer for sale of products in Oregon shall [insure that the container meets one of the following criteria]:

(a) [Contains] Contain 25 percent recycled content by January 1, 1995;

(b) [Is] Be made of plastic that is being recycled in Oregon at a rate of 25 percent by January 1, 1995; or

(c) [Is] Be a reusable package.

(2) A [manufacturer's] rigid plastic container shall meet the requirements in subsection (1)(b) of this section if the container meets one of the following criteria:

(a) It is a rigid plastic container and rigid plastic containers, in the aggregate, are being recycled in the state at a rate of 25 percent by January 1, 1995;

(b) It is a specified type of rigid plastic container and that type of rigid plastic container, in the aggregate, is being recycled in the state at a rate of 25 percent by January 1, 1995; or

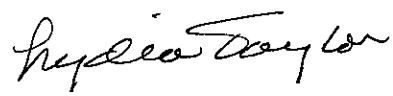
(c) It is a particular product-associated package and that type of package, in the aggregate, is being recycled in the state at a rate of 25 percent by January 1, 1995.

SECTION 3. ORS 459A.660 is amended to read:

State of Oregon
Department of Environmental Quality

Memorandum

Date: 4/13/95

To: Environmental Quality Commission
From: Lydia Taylor, Interim Director 
Subject: Agenda Item H, April 14, 1995 EQC Meeting

Petition for Modification of the Total Dissolved Gas Standard as Provided by
OAR 340-41-205, 445, 485, and 525 (2)(n)

Statement of Issue

On March 27, 1995, the Commission received a petition from the National Marine Fisheries Service seeking a variation to the state's water quality standard for total dissolved gas on the mainstem Columbia River to assist outmigrating threatened and endangered salmon smolts. The service seeks a variation to allow for a total dissolved gas standard of 115 percent as a daily (12 highest hours) average as monitored at forebays and a daily (12 highest hours) average of 120 percent as measured in tailrace monitors below the dams. This variation has been requested beginning on April 20, through August 31, 1995.

Background

At its meeting of February 16, 1995, the Environmental Quality Commission (EQC) modified the Oregon Administrative Rules to enable it to modify the total dissolved gas standard for the Columbia River for the purpose of assisting juvenile salmon in-river migration.

The National Marine Fisheries Service's petition flows from its re-issued 1994-98 Federal Columbia River Power System Biological Opinion in which spill is an important component of salmon recovery. Spill is intended to reduce mortality of juvenile salmon through the hydro-generating system, with the purpose of avoiding further jeopardy to the existence of Snake River Chinook and sockeye salmon.

The National Marine Fisheries Service is aware of the comparative risks involved in elevated total dissolved gas levels and has addressed this issue in its Biological Opinion.

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

Schedule of Events

The petition was received by the Department on March 27, 1995.
The petition was made available for public comment on March 28, 1995.
A public workshop on the issue was held in the morning of April 7, 1995.
A formal public hearing at which testimony was taken was held in the afternoon of April 7, 1995.
Written comments were due with the Department at 5:00 p.m. on April 7, 1995.
The EQC meets at 9:00 a.m. on April 14, 1995 to consider the issue.

Summary of the Department's Review of the Petition

The Department's full review of the petition is attached at Appendix A.

The petition relies heavily upon the 1994-98 Federal Columbia River Power System Biological Opinion, and Spill and 1995 Risk Assessment, both of which have undergone detailed analysis in the Department. Concerns with the Spill and Risk Assessment have been communicated to the Oregon Department of Fish and Wildlife, and they have responded to these concerns in their submissions during the public comment period for this petition. While there are a couple of areas of disagreement among technical experts, the Department believes its concerns have been substantially addressed. None of the areas of disagreement compel the Department to recommend a different course of action in relation to this petition. The Department's concerns and the Oregon Department of Fish and Wildlife's response are attached at Appendix B.

Summary of Public Comment

The report of the public hearing held on April 7, 1995, is attached at Appendix C.

Generally, the petition was supported by federal and state fisheries and environmental agencies, tribes, recreational and commercial fishing interests, and environmental groups. Opposition was expressed by the following:

Direct Service Industries*;
The Pacific Northwest Generating Cooperative*;
The City of Boardman;
The Columbia River Alliance;
Aspen Applied Sciences Inc (Larry Fidler)*;
Jim Anderson, University of Washington*;
Don Chapman, Ph.D.*;
Wes Ebel, Ph.D.*.

*Consolidated comments were submitted on behalf of these parties by the Direct Service Industries and The Pacific Northwest Generating Cooperative.

Objections to the Petition

1. Enormously significant relaxation of water quality standards should not be adopted in abbreviated proceedings. The fisheries agencies have known for a year that they were going to request this waiver. Their filing of the request at the last minute has hampered public comment and not enabled adequate response to be made.
2. The spill program will decrease salmon survival, not increase it, by removing salmon from transportation. Smolts are better off left in barges.
3. The state and tribal Spill and 1995 Risk Assessment document cannot be relied upon to support any increase in allowable total dissolved gas. A number of scientists from different agencies have identified flaws in this document (including Bob Baumgartner from this Department). The agencies responsible for this document have known of these concerns for over two months, but have delayed responding to them until the last possible moment (April 7, 1995, at the public hearing).
4. A massive spill program is unnecessary to achieve the National Marine Fisheries Service's goal of passing 80 percent of the salmon around the turbines. Equating the percentage of fish passed by dams with the quantity of water spilled is erroneous. The 80 percent fish passage efficiency can be achieved with much lower levels of spill.
5. The proposed monitoring is inadequate. The salmon recovery team recommends that monitoring take place in the tailrace of each dam, not in the forebay of the next dam downstream where dissolved gas levels will be much lower. Biological monitoring based on visible external signs of gas bubble disease will not protect salmon, because by the time visible signs appear, significant losses will have already occurred.
6. The spill program will cost Northwest electric ratepayers at least \$42 million. The Commission needs to set water quality standards to protect beneficial uses, including hydroelectric generation, and consideration of economic impacts. The economic impacts of this program include the loss of 4,500 megawatt months of power at a cost of \$42 million.
7. Quantifiable micro-organism changes were detected in surface and groundwater tests conducted at the City of Boardman upon completion of last year's spill. Non-chlorophyll processing micro-organisms associated with the benthic layer completely disappeared after the spill.
8. Fish mortality of 80 percent was recorded in an experiment in which fish were held 3-5 feet below the water at 120 percent total dissolved gas. The National Marine Fisheries Service's proposal will result in significant mortality according to that research.
9. Mortalities from gas bubble disease are well documented. The Columbia River Alliance cites an experiment at Ice Harbor Dam in 1970 in which 98 percent of fish held at the surface of the water died within 24 hours at 127 percent total dissolved gas.

10. Fish will not move away from supersaturated water, even if "non-gassed" water is available. The 60,000 fish killed on the Willamette River in February, 1995, could have moved to unsaturated water or sounded to avoid the supersaturated water, but they did not.
11. Survival does not increase under a spill regime. Direct turbine mortality at Bonneville has been estimated at between one and four percent by Dr. Wes Ebel.
12. Spill can kill returning adult salmon. High spill may lead to confusing currents making it difficult for fish to find fishway entrances.
13. Spill at levels less than those proposed can kill fish. Dissolved gas levels of 114-117 percent can kill large numbers of fish in a short time.
14. National Marine Fisheries Service's own scientists agree that effects above 110 percent are uncertain.

Arguments in Support of the Petition

While many of the arguments in support of the petition have been presented by the petitioners and others testifying on behalf of the petition, one unique argument emerged from the public hearing held on April 7, 1995. Jim Weber from the Columbia River Inter-Tribal Fish Commission noted that the state is mandated to set water quality standards to support beneficial uses. Traditionally the Department has set water quality standards to support the most sensitive beneficial use, in this case, salmon. He noted the anomalous situation where, in regard to transportation of smolts, the most sensitive beneficial use is being removed from the river. His argument is that the water quality standard ought to be set to support this use, not for other beneficial uses at the expense of salmon.

Department's Response to Public Comment

1. The Department has some sympathy with the objections based on timing. Nonetheless, both the Commission and interested parties are well prepared for the issue having visited it a number of times over the past two years. While the fisheries agencies have been aware of the need for this program for a year, so has the Commission and interested public parties. The Department does not believe that anyone has had their opportunity to comment or to review material severely restricted as a result of the late filing of the petition.
2. The spill program is part of the overall strategy for salmon recovery. Significant numbers of salmon will still be transported in barges, but leaving the fish in the river is the most natural way for them to swim to the sea.
3. The state fishery agency and the tribes released their Spill and 1995 Risk Assessment and received comments on it from a number of sources including the Department. The Oregon Department of Fish and Wildlife has responded to comments from Bob Baumgartner of this Department. The responses received have gone a long way to addressing our concerns. While there are still some outstanding issues, these are largely differences in

approach. Both agencies arrive at a similar conclusion, *i.e.*, support of the National Marine Fisheries Service's petition for a temporary increase in the dissolved gas standard to 115-120 percent.

4. The National Marine Fisheries Service's expert opinion is that an 80 percent fish passage efficiency, and the associated spill is an important component of salmon stock recovery.
5. The National Marine Fisheries Service has submitted a detailed and comprehensive monitoring plan that includes monitoring in the tailraces and holding fish in pens below Bonneville Dam. A sample of fish will be examined under a dissecting microscope for signs of gas bubble trauma. Mortalities will be necropsied for internal signs of gas bubbles.
6. The Department has no response to this objection. The Commission needs to balance beneficial uses and the economic impacts.
7. No monitoring of groundwater or surface water for organism changes of the type described by the City of Boardman were undertaken last year. The changes detected may, or may not, be related to the spill program. This is the first time this has been drawn to the Department's attention. There could be many explanations for the results obtained in the tests, and the Department welcomes data from the City of Boardman during this spill program, if approved.
8. Considerable mitigation of exposure to gas supersaturated water is available to fish through their ability to seek greater depths of water. Holding fish within a narrow range of depth removed this option. Fish swimming freely in the river are able to seek deeper water.
9. It is not proposed to hold fish at the water's surface, nor is it proposed to elevate total dissolved gas levels to 127 percent. The recommended cap in the Biological Opinion is 125 percent for two hours on the highest 12 hours in a calendar day.
10. In the Department's analysis, appended to the staff report submitted to the Commission for its consideration of the United States Fish and Wildlife petition on March 15, 1995, the circumstances surrounding the Willamette River mortalities were described. In particular, fish held in net pens were restricted in their depth ability to a maximum of eight feet due to the bottom of the pens being lifted by the strong current. Mortality also likely occurred as a result of fish having to battle the high currents. Bob Baumgartner, in that memorandum, concluded that "the observed mortality is likely the result of several interacting factors, stress from struggling against the current, physical descaling from contact with the net, and gas bubble trauma."

11. Turbine mortality varies from dam to dam. On average it has been estimated at between 10-15 percent throughout the whole hydroelectric generating system. Fish passage efficiencies have been calculated taking into account a number of factors, including turbine mortality. Fish passage efficiency does increase with increased spill (see Table 1 of Appendix A).
12. Spill will be occurring at night. During the day, when adults migrate, they will have access to fish ladders without undue turbulence.
13. The Department reiterates its response to item 8 above. Depth compensation can assist fish in overcoming the effects of gas bubble trauma.
14. There are disagreements between scientists over the effects of elevated dissolved gas levels on fish. However, the National Marine Fisheries Service shows the balance of risk favoring a temporary increase in the dissolved gas standard. National Marine Fisheries Service's scientists who were critical of the state and tribes Spill and 1995 Risk Assessment agreed that fish mortalities from spill equate to mortalities from turbine passage at a dissolved gas level of 120 percent.

The Department found Dr. Fidler's testimony at the public hearing compelling in his claim that he was not opposed to spill *per se*, but that if spills are to be increased they should be done so incrementally with careful monitoring. He proposed five percent increments with monitoring. If no adverse impacts were detected, a further incremental increase could be tried, again with monitoring. Incremental increases could continue until deleterious effects were detected, at which point, an incremental decrease to a safe level should occur. The National Marine Fisheries Service proposes such an incremental increase to 115-120 percent, and has produced a monitoring plan to observe the effects of the incremental increase.

Necessary Findings

If the Commission is to grant this petition, it must make four findings as contained in the rule it adopted on February 16, 1995. The following are the possible findings based on the petition:

(i) Failure to act will result in juvenile salmon swimming through the turbines. Smolts swimming through the turbines have significantly greater mortality than those passing dams through increased spill. Mortality through the turbines is estimated at 10-15 percent, versus an estimated 2-3 percent over the spillway. Estimates of fish passage efficiency and total dissolved gas levels are provided in Appendix A, Table 1.

(ii) The balance of risk of impairment due to elevated total dissolved gas levels needs to be balanced against mortality of turbine passage. In their response to the state and tribes Spill and 1995 Risk Assessment, National Marine Fisheries Service's scientists estimate that turbine mortality equals mortality from total dissolved gas at around the 120 percent level. This is viewed as a conservative estimate (in response to the Spill and 1995 Risk Assessment's estimate of 130-135 percent of total dissolved gas). Given this conservative estimate, the balance of the risk of impairment seems tipped in favor of granting a variation of the total dissolved gas standard. This perception was stated by a number of parties in their public comments.

(iii) The National Marine Fisheries Service submitted a detailed monitoring plan with its petition. Physical monitoring will take place at the forebays and tailraces of McNary, John Day, Dalles and Bonneville Dams. Tailrace monitoring at Bonneville will take place at Warrendale/Skamania. Transect measurements will also be taken at each of the four dams.

(iv) Biological monitoring is an integral part of the National Marine Fisheries Service's monitoring plan submitted in support of this petition. In addition, a committee, which includes participation by the Department, has been established to oversee the spills. The results of physical and biological monitoring will be available to this committee which will recommend any necessary action in the event of adverse impacts on salmonids due to elevated gas levels. The Department will monitor the spills carefully to ensure that they comply with any revised standard set by the Commission.

The Commission must find that:	
(i)	failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill.
(ii)	the modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas to both resident biological communities and to migrating adult and juvenile salmonids, and to other migrating fish when compared to other options for in-river migration of salmon.
(iii)	adequate data will exist to determine compliance with the standards, and
(iv)	biological monitoring is occurring to document that the migratory salmonid and resident biological communities are being protected.

Recommendation

The Department recommends that the Commission grant this petition, subject to implementation of the physical and biological monitoring regime as detailed in the monitoring plan submitted by the National Marine Fisheries Service dated April 7, 1995; and

- (i) Approve a revised total dissolved gas standard for the Columbia River for the period from midnight on April 19, 1995 to midnight on August 31, 1995;
- (ii) Approve a total dissolved gas standard for the Columbia River of a daily (12 highest hours) average of 115 percent as measured at established monitors at the forebay of the next dam downstream from the spilling dam during this time. In the case of Bonneville Dam the measurement shall be taken at Camas/Washougall;
- (iii) Approve a further modification of the total dissolved gas standard for the Columbia River to allow for a daily (12 highest hours) average of 120 percent as measured at established tailrace monitors below the spilling dams during this time. In the case of Bonneville Dam the measurement shall be taken at Warrendale/Skamania;

(iv) Approve a cap on total dissolved gas for the Columbia River during the spill program of 125 percent, based on the highest two hours during the 12 highest hourly measurements per calendar day during this time; and

(v) Require that the Director halt the spill program if:

either 15 percent of the fish examined show signs of gas bubble trauma in their non-paired fins;

or five percent of the fish examined show signs of gas bubble trauma in their non-paired fins where more than 25 percent of the surface area of the fin is occluded by gas bubbles.

Which ever is the less.

Attachments

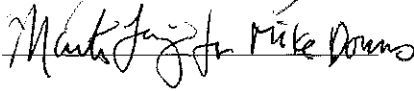
- A Department's Technical Review of Petition
- B Department's Comment on the Spill and 1995 Risk Assessment and Oregon Department of Fish and Wildlife Response
- C List of Those Testifying at the Public Hearing and Summary of Testimony.

Approved:

Section:

Division:





Report Prepared By: Gene Foster
Russell Harding,

Phone: 229-5284

Date Prepared: 14 April 95

RH:crw
SA\WC13\WC13395

Appendix A

Review of the National Marine Fisheries Service (NMFS) Petition to Modify the State's Water Quality Standard for Total Dissolved Gas (TDG) for the Columbia River for the Purpose of Aiding Listed Endangered Salmonids from the Snake River.

There are three Snake River salmon stocks listed as endangered under the Endangered Species Act. Snake River sockeye salmon were listed as endangered (November 20, 1991 56 FR 58619). Snake River spring/summer chinook salmon and Snake River fall chinook salmon were originally listed as threatened but are proposed for reclassification as endangered (interim emergency rule August 18, 1994, 59 FR 42529 and proposed rule, December 28, 1994, 59 FR 66784).

The petition states that the rationale and supporting documentation is contained in the:

1. Endangered Species Act - Section 7 Consultation: Biological Opinion: Reinitiation of Consultation on the 1994-1998 Operation of the Federal Columbia River Power System and Juvenile Transportation Program in 1995 and Future Years issued March 2, 1995, by NMFS Northwest Region (Bi-Op);
2. The Spill and 1995 Risk Management developed by Columbia River Intertribal Fish Commission, Idaho Department of Fish and Game, Oregon Department of Fish and Wildlife, and the Washington Department of Fish and Wildlife which was submitted during the public comment period for the 2/16/95 TDG rule change.

Service (NMFS) petition requests a change in the TDG criteria for the mainstem Columbia River. The requested changes to the criteria were:

* Twelve hour average of 115% TDG measured at the forebay of the McNary, John Day, and The Dalles Dams and at the Camas/Washougal station below Bonneville Dam;

* Twelve hour average of 120% TDG measured at the tailrace The National Marine Fisheries monitors of the McNary, John Day, and The Dalles Dams and at the Warrendale/Skamania station below Bonneville Dam. The measurements collected at the Warrendale/Skamania station would be modeled to reflect conditions at the tail race approximately one mile downstream of the Bonneville Dam;

The petition does not request a maximum TDG level. The importance of defining a maximum cap was discussed during the deliberations that led to rules modifying TDG criteria for the Columbia River. A maximum TDG level was stated in the Bi-Op:

* Two hour average of 125% TDG measured during the 12 highest hourly measurements per calendar day at the forebay or tailrace monitors at McNary, John Day, or The Dalles Dams or the Camas/Washougal or Warrendale/Skamania monitors below Bonneville Dam. The measurements collected at the Warrendale/Skamania station would be modeled to reflect conditions at the tail race approximately one mile downstream of the Bonneville Dam.

The recently adopted modifications (2/16/95) to the TDG rule for the Columbia River require the Commission to make four findings prior to changing the TDG criteria. The required findings are:

1. Failure to act would result in greater harm to salmonid stock survival through in-river migration than would occur by increased spill;
2. The modified total dissolved gas criteria associated with the increased spill provides a reasonable balance of the risk of impairment due to elevated total dissolved gas both to resident biological communities and other migrating fish and to migrating adult and juvenile salmonids when compared to other options for in-river migration of salmon;
3. Adequate data will exist to determine compliance with the standards; and
4. Biological monitoring is occurring to document that the migratory salmonids and resident biological communities are being protected.

Discussion: Finding #1

Juvenile migration out of the Columbia River has been identified as a critical time period in the life history of these fish. Significant mortality occurs as these fish migrate past the Columbia River dams. The National Marine Fisheries Service has developed recovery plans for the three species of endangered salmonid stocks. Additional spill is one component of the recovery plans and is supported by state and tribal fisheries agencies. The NMFS has estimated that Fish Passage Efficiency (FPE) during spring high flow conditions would increase from 57.4% at a base of no spill to 64.9% and 71.1% for TDG levels of 110% and 120% as measured at tailrace monitors. FPE during summer conditions would increase from 38.4% to 43.5% for TDG levels of 110% and 120% as measured at tailrace monitors (Table 1). TDG levels above the state standard and the national criterion of 110% could pose an additional risk to aquatic species. The overall effect of elevated TDG in the Columbia River is debatable.

Table 1: TDG Percentage as Measured in the Tailrace and FPE for Spring and Summer Flow Conditions as Modeled by NMFS

Spring Flow FPE %

No Spill	57.4
Spill to 110%	64.9
Spill to 115%	69.7
Spill to 120%	71.1

Summer Flow

Spill to 110%	38.4
Spill to 115%	41.8
Spill to 120%	43.5

Discussion: Finding #2

The document Spill and 1995 Risk Management (Risk document) was submitted by the Oregon Department of Fish and Wildlife as part of a hearings record relating to the Department's proposed rule modification for procedural changes to the TDG standard which was revised 2/16/95 and the hearing on the change in criteria held on 4/7/95. The Risk document identifies that TDG levels in the range of 130%-135% approach a balance of mortality from TDG and from turbine passage. The Risk document proposes a TDG level in the range of 120-125% TDG. This review does find that the range of TDG of a 12-hour 120% TDG, with a maximum of 125% is within the range of TDG criterion that would provide a reasonable balance of the risks to aquatic life with the calculated benefits of spill. The TDG levels in the range of 120-125% appear to approach a threshold above which available instream bioassays infer significant mortality may occur. Lower levels of TDG provide less risk of direct and indirect mortality, but according to the information presented in the Risk document, reduce the benefits to higher fish passage efficiency at hydroprojects.

Specific comments and request for clarification of the Risk document were submitted by the Department to Oregon Department of Fish and Wildlife in a February 24, 1995, letter that was drafted from reviews documented in memos dated February 2, 3, 6, and 8, 1995 (Appendix B). There were eleven items listed in the letter. These items were:

- * Provide additional review of available literature to support the statement of increased survival of both adults and juveniles with greater flow.
- * Provide information that indicates residence time of juveniles is reduced with spill.
- * Clarification of juvenile survival calculations.

- * Discuss and/or reference how FPE varies at each dam and by season and ability to achieve 80% FPE at all projects.
- * Provide additional information on behavioral depth compensation.
- * Provide additional detail and discussion of the development and data used in the mortality function.
- * Provide additional information on the ability of fish to recover from intermittent exposure.
- * Discuss the relationship between external signs of GBD and sublethal mortality effects.
- * Statement to incorporate deep volition live cage bioassays into the monitoring design.
- * Discuss the NMFS expert panel recommendations for monitoring and how the recommendations were incorporated into the proposed 1995 monitoring plan.
- * Discuss Oregon Department of Fish and Wildlife's concerns with transportation of juvenile salmonids around dams.

Oregon Department of Fish and Wildlife's response to these inquiries as submitted to the Department as part of the April 7, 1995, public hearing on TDG criteria for the Columbia River (Appendix B). Oregon Department of Fish and Wildlife in testimony at the 4/7/95 TDG hearing, continued support of the Risk Document and the conclusions reached in the document. A summary of the response from Oregon Department of Fish and Wildlife to the Department's 2/24/95 letter is as follows:

- * Smolt travel time, and juvenile and adult survival related to flow is discussed and reviewed in the 1991 Biological and Technical Justification for the Columbia Basin Fish and Wildlife Authority's Flow Proposal. Oregon Department of Fish and Wildlife maintains that the empirical data suggest that elevated TDG's do not automatically reduce migrant survival under recent operating conditions.
- * Some quantitative data have been collected in 1994 by the National Biological Service (NBS) on passage times of juveniles at dams in relationship to spill and project operations. Preliminary data from NBS indicate support of the hypothesis of reduced residence time at dams due to spill.
- * The Risk document is in draft form at this time and the final document will clarify the section on page 43 regarding the modified Snake and Columbia River mortality functions used to incorporate the effects of exposure time in the risk analysis.
- * The FPE is the percentage of fish that pass a project by non-turbine routes (spill, collection, and sluiceway passage). FPE will vary by project depending on several factors which include; percentage of flow spilled, spill efficiency, diel passage, sluiceway efficiency, and differences in Fish Guidance Efficiency (FGE). FGE would vary from project to project due to; the physical layout of the project and mechanical bypass systems, project operations, fish characteristics, and

environmental conditions. There are inadequate data for estimating the variability for these parameters, primarily those affecting FGE, to include parameter variability into models.

* Depth distribution studies were conducted 1 to 27 km above Lower Granite Dam by NBS. These studies indicate a deeper distribution of juveniles in the water column than has been observed in previous studies.

* Oregon Department of Fish and Wildlife provided a rationale addressing model adequacy and residual analysis for the logistic regression used to describe mortality.

* Additional literature related to the effects of intermittent exposure will be included in the final Risk document. Recent data generated in 1994 by NBS indicate a diel vertical movement of smolts from shallower depths during the day to deeper depths at night. Diel smolt movement to compensatory depths could increase smolt tolerance to TDG.

* There needs to be additional investigation of the correlation and predictive power of external signs of GBD in relation to mortality before a threshold of external observations indicating impending mortality can be developed as stated by the June 1994 NMFS Expert Panel.

* Deep volition live cages (0-18 ft) have been incorporated into the 1995 monitoring plan but the four day exposure duration remains as fish held longer may experience reductions in health unrelated to TDG which could confound results.

* The November 1994 NMFS expert panel comments on physical and biological monitoring have been incorporated in to the NMFS monitoring and research plan for 1995 that is being coordinated with state, federal, and tribal fishery agencies, state and federal water quality agencies, and the COE.

* Oregon Department of Fish and Wildlife does not support continued transportation of juveniles in the Snake and Columbia Rivers because there are no conclusive data to substantiate that fish survival to spawning grounds is improved with transportation.

* The error in the analysis of conversion rates of adult spring chinook vs flow, spill, and TDG has been corrected and does not change the conclusion based on this analysis.

* Oregon Department of Fish and Wildlife maintains that their depth compensation estimates are accurate and that their estimates more accurately fit the field observations.

Oregon Department of Fish and Wildlife's responses provide additional clarification and justification for the conclusions in their Risk Document. Although limited review time does not allow a detailed analysis of Oregon Department of Fish and Wildlife's responses, the Department does not fully agree with all aspects of Oregon Department of Fish and Wildlife's responses and analysis. The Department's review of the literature can be found in previous staff reports on the issue and in the memos reviewing the Risk document (Appendix B). The Department does agree that the literature and data support the NMFS petition.

Discussion: Finding #3:

The NMFS has developed a Gas Bubble Disease Monitoring and Management Program that includes physical monitoring of TDG levels and biological monitoring for TDG effects on migrating salmonids and resident biological species. The program would begin on April 20 at selected lower Columbia River projects and would continue through August 31. The data from physical and biological monitoring will be distributed daily to members of a multi-agency technical review team (TRT). TRT members include NMFS, U.S. Fish & Wildlife Service, state and tribal fisheries agencies, U.S. Army Corps of Engineers, Bonneville Power Administration, the Fish Passage Center, Oregon Department of Environmental Quality, and Washington Department of Ecology. The TRT will meet by conference call each Tuesday at 2:00 p.m. to discuss the effects of the spill and identify if adjustment to the spill is required based on the physical and biological monitoring. Recommendations will be forwarded to the Technical Management Team for consideration for action.

Physical Monitoring

Physical monitoring data will be measured and reported by the U.S. Army Corps of Engineers. TDG will be measured hourly at forebays and tailraces of McNary, John Day, The Dalles, and Bonneville Dams. TDG tailrace monitoring for Bonneville Dam will occur at the Warrendale/Skamania established monitoring station and data collected from this station will be modeled to estimate TDG levels one mile downstream of Bonneville Dam (Table 2). In addition, TDG monitoring will be conducted at the Camas/Washougal station. Monitoring instruments will be calibrated on a weekly basis and data verified on a daily basis. Transect measurements will be conducted at McNary, John Day, The Dalles, and Bonneville Dams during different discharge and spill conditions to determine if; the river is mixed within the cross section (depth and width), how TDG mixes and/or dissipates along a reach, and if there are preferred locations for monitoring.

Table 2: Compliance Monitoring Locations and Associated TDG Limits

<u>Project</u>	<u>TDG% 12 Hour Average and 2 Hour Maximum</u>	
	<u>Forebay</u>	<u>Tailrace</u>
McNary	115/125	120/125
John Day	115/125	120/125
The Dalles	115/125	120/125
Bonneville	115/125	120/125*
Camas/Washougal	115/125	--

* Data collected at the Warrendale/Skamania monitoring station

Discussion: Finding #4

Biological Monitoring

The biological monitoring program will include assessments of gas bubble disease (GBD) in migrating juvenile and adult salmonids, and in resident biota. The GBD components are:

1. Establish an appropriate protocol for assessing GBD in salmon and steelhead to provide consistent, reproducible results using a non-lethal method of assessment.
2. Monitor the prevalence and severity of GBD in juvenile salmon and/or steelhead collected at McNary, John Day, and Bonneville Dams during the smolt outmigration. Additional sites, including reservoirs will be added for comparative purposes.
3. Monitor the prevalence and severity of GBD in adult salmonids through visual examination at Bonneville Dam during the adult migration period.
4. Monitor the prevalence and severity of GBD in resident fish species sampled in the mid- and lower-Columbia River reaches.
5. Monitor the incidence and severity of GBD in juvenile salmonids, resident non-salmonid fish and invertebrates held in shallow and deep water netpens for a minimum of four days.

Juvenile salmonids will be routinely monitored for signs of GBD by the NBS at Smolt Monitoring Program (SMP) sampling locations and by the NMFS in planned river reaches and netpen studies. Adult salmon will be monitored by various agencies for signs of GBD as they ascend fish ladders at selected locations.

Salmonid Smolt Monitoring

Monitoring at Dams

The Fish Passage Center (FPC) conducts a system wide juvenile smolt monitoring program on the Snake and Columbia Rivers. The FPC will be responsible for maintaining historical and real time data bases of physical and biological data pertaining to the juvenile salmonid outmigration. GBD monitoring will be conducted on live fish at McNary, John Day, and Bonneville Dams using the following procedures.

1. When forebay dissolved gas levels average 115% or less:

A subsample of 40 chinook and 40 steelhead will be observed for bubbles in the lateral line, fins, opercula, eyes, and buccal cavity. Fish will be collected from the separator at McNary, the airlift at John Day, and the bypass sampler at Bonneville. The samples will be collected three times per week at each project.

2. When forebay dissolved gas levels exceed 115%:

The above monitoring will be conducted on a daily basis.

Monitoring at Reservoirs

Juvenile salmonids will be collected from the reservoir above McNary Dam and examined for external signs of GBD.

In Situ Holding Experiments

Bonneville Hatchery juvenile chinook salmon will be held in netpens downstream from Bonneville Dam when dissolved gas levels are greater than 115%. The fish will be held for a minimum of four days in either netpens that are 4-meters deep allowing unrestricted vertical movement, depth restricted to 0 to 1 meter, or depth restricted to two to three meters. Fish will be examined at the end of the four day exposure for external signs of GBD, documenting the presence of bubbles on or in fins, opercula, eyes, and buccal cavity. A subsample of ten fish from each group will be examined under a dissecting scope to assess lateral line bubbles. Mortalities will be necropsied to assess internal signs of GBD.

Distribution Monitoring

Studies will be conducted to determine the vertical and horizontal distribution of juvenile salmonids. These surveys will be conducted at McNary and below Bonneville Dams. Vertical distribution of radio-tagged juvenile hatchery spring chinook in gatewells will be conducted at McNary dam. Hydroacoustic surveys of the vertical and horizontal distribution of smolts will be conducted below Bonneville Dam.

Adult Salmonid Monitoring

Adult migrating salmon monitoring for GBD will occur at Bonneville Dam on fish entering the trap in the north shore fish ladder. Fish will be collected one to three days per week, six to eight hours per day which will probably represent less than five percent of those migrating past Bonneville Dam. The fish will be anesthetized and examined for external signs of GBD and then released back to the fish ladder.

Distribution Monitoring

Adult migrating salmon will be captured at or below Bonneville Dam and radiotagged to allow horizontal distribution and residence time data to be collected.

Resident Biota Monitoring

Resident biota GBD monitoring will be conducted below Bonneville Dam. Sampling will occur at a selected site once each week April through June or July. One hundred individuals of the predominant taxa will be collected and examined for signs of GBD. Benthic and epibenthic organisms will be collected in water depths ranging from 0.5 to 3.0 meters. The data collected will include species, life history stage, size, location of capture, macro- and microscopic external signs of GBD, and TDG at the sampling site. Should TDG levels exceed 115% and/or signs of GBD are detected, additional sites will be sampled within the affected river reach.

Resident fish collected in the John Day Reservoir during a study investigating the effects of drawdown on river ecology will be examined for signs of GBD. Sampling will be conducted bi-weekly through the spill season.

In Situ Holding Experiments

A subsample of up to 100 individuals of each taxon of resident fish will be held for four days in either netpens that are 4-meters deep allowing unrestricted vertical movement, depth restricted to 0 to 1 meter, or depth restricted to 2 to 3 meters. The fish will be examined for signs of GBD. The netpens will be located downstream of Bonneville Dam.

April 7, 1995

Robert P. Baumgartner
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DEPARTMENT OF
FISH AND
WILDLIFE

Dear Bob:

We appreciate your February 24, 1995 comments on the draft report "Spill and 1995 Risk Management" (S/95RM) submitted to the Department of Environmental Quality (DEQ) by the state fishery agencies and tribes. In this letter we provide the responses you requested to 11 specific comments and also address selected detailed comments. We have also submitted this material including the draft S/95RM (Attachment 1) to Russell Harding for the record of DEQ's Public Comment on the variation to the Total Dissolved Gas Standard proposed by the National Marine Fisheries Service for 1995 Columbia River. Because of the magnitude of comments received from you and others on the S/95RM, we will revise and finalize the document at a later date.

- 1) An extensive discussion and review of the data cited in the S/95RM relating flow, smolt travel time, and juvenile and adult survival is available in the 1991 "*Biological and Technical Justification for the CBFWA Flow Proposal*" (Attachment 2) which I believe has been provided to you. In summary, the empirical data suggests that elevated TDG's do not automatically reduce migrant survival under recent operating conditions.

For instance, survival indices of wild spring chinook from adult spawner to adult recruit during 1980-90 in Marsh Creek and the Innaha River were greatest under high flow, spill, and TDG (Table 3 from S/95RM is plotted in Attachment 3). Petrosky and Schaller (1992) and Petrosky (1991) confirmed that survival of Snake River spring/summer chinook was significantly related to flow when early broods were included in the analyses. However, small sample sizes resulted in low significance levels for regressions with TDG. (TDG data is available beginning in 1982). Low statistical power and autocorrelations between variables precluded the ability to distinguish the effects of TDG from flow and spill. In addition, most juveniles were transported during low flow years making it difficult to identify the effects of in-river migration conditions during those years. It is noteworthy though, that the relationship between survival and TDG is positive (driven by the high autocorrelation between spill and TDG) which supports our overall conclusion that TDG's in range of 120-125% (up to 122.9% in the analysis) do not reduce survival benefits of Snake River chinook provided by high flows and spills.

Similarly, elevated TDG's did not reduce recapture rates of PIT-tagged juvenile chinook and steelhead at McNary Dam following release at Rock Island and Little Goose dams. In fact, the highest recovery from Little Goose Dam occurred in 1993 when flow, spill, and TDG were greatest.



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Finally, survival of fall chinook from Priest Rapids Hatchery during 1980-87 was positively correlated to flow ($p < 0.05$), spill, and TDG (Attachment 4). In this analysis, we used VPA survivals from Hilborn et al. (1993) adjusted for ocean conditions which improved fit of the regressions. Again, low power of regressions and high autocorrelation of variables prevent separation of the effects of flow, spill, and TDG on survival. However, maximum survival occurred in 1982 when TDG averaged 124.5%, strongly suggesting that flow and spill improves survival at TDG up to 125%.

- 2) I am aware of little quantitative information on passage times of juveniles at dams in relationship to spill and project operations. In 1994 the NBS initiated a radio telemetry study in Lower Granite Reservoir to investigate the migration characteristics of juvenile chinook and steelhead in relationship to environmental variables and project operations (Attachment 5). (Note: The NBS emphasize that the report is provisional and subject to change). The NBS found that steelhead migrated faster from release sites to first detection at Lower Granite under higher flows and spent less time in the forebay with spill. Migration rates of chinook in the reservoir did not increase with flow and showed no relationship in time spent in the forebay with spill. Steelhead spent a large proportion of time in the forebay (5 d vs 0.8 d for chinook) and exhibited upstream movements during periods of no spill. These data, although preliminary and from limited numbers of radio-tagged hatchery juveniles, do provide some information to support the hypothesis that residence times at dams can be reduced by spill.
- 3) Revisions for the final report will clarify the section on page 43 regarding the modified Snake and Columbia River mortality functions used to incorporate the effects of exposure time in the risk analysis.
- 4) Fish passage efficiency (FPE) is the percentage of fish which pass a project by non-turbine routes (spill, collection, and sluiceway passage). A general formula for computing FPE is as follows:

$$FPE = [(Diel)(SpFlow) + (Diel)(PhFlow)(FGE) + (1-Diel)(FGE)]$$

where FPE = Fish passage efficiency (%)
Diel = % of fish passing during spill hrs
SpFlow = % of flow spilled
PhFlow = % of powerhouse flow
FGE = Fish guidance efficiency (FGE) % of fish diverted in collection system or sluiceway.

FPE varies by project due to several factors including % of flow spilled, spill efficiency, diel passage, sluiceway efficiency, and differences in FGE. FGE is affected by the physical layout of the project and mechanical bypass systems, project operations, fish characteristics (vertical distribution, species, stock, condition, physiological status), and environmental conditions (temperature, flow, turbidity). In general, FGE is greater for spring than summer migrants. The 80% FPE goal can be achieved only by spilling at each project and would be limited by the dissolved gas criteria (115% forebay/120% tailrace 12 hr average) proposed by NMFS under the Biological Opinion. The 80% FPE goal will be achieved at 2 of 8 projects (Ice Harbor and McNary) under the 120% TDG tailrace criteria proposed by NMFS during the spring and at none of the projects during the summer primarily because of low FGE's for summer migrants.

Tables are provided to show the expected FPE for spring and summer migrants at each project without spill as a base case (Attachments 6 and 7). Parameter values for spill efficiency, diel passage, FGE, sluiceway efficiency, and turbine, spillway, bypass, and sluiceway survival shown are those typically used in the region. Parameter values are assumed to be constant for each species of spring and summer migrants. However, as discussed above, these parameters (most importantly FGE) vary due to several factors but there is simply inadequate data to estimate this variability to incorporate into models.

Calculation of the survival benefit of spill is difficult because spill effects cannot be separated from flow and other measures used to improve downstream passage survival of juveniles. The survival benefits of spill will be underestimated using the above data which do not account for the survival benefits of reduced delay in dam forebays. Assumptions for bypass mortality are also optimistic (2% mortality assumed) since low flows and high temperatures can cause higher mortality like that seen at McNary Dam last year. Predation at outfalls can be acute (Ledgerwood et al. 1991) but has only been measured at Bonneville Dam, hence, was not included at other projects. The bottom line is that if these data are used to estimate survival benefits, then the uncertainty of model parameters and assumptions, and the limitations of estimates need to be explicitly stated.

- 5) You have cited data on depth distribution of juveniles from Dawley et al. (1975), Weitkamp and Katz (1980), Smith (1974), and Blahm et al. (1975). Recent depth distribution studies by the NBS using hydroacoustics in Lower Granite Reservoir along 87 transects located 1-27 km above Lower Granite Dam indicated that juveniles are distributed deeper in the water column than was indicated by the above studies (Attachment 5). Of the total fish targets, 1.9-11.3% were distributed between 1-2 m and 6.2-19.3% were distributed between 1-3 m. In contrast, Dawley (1975) found that 80% of chinook and steelhead in Lower Monumental Reservoir were in the upper 1.8 m and Smith (1974) found that 46% of chinook and 28% of steelhead in Lower Monumental were above 2 m.
- 6) Questions of model adequacy and residual analysis were raised by two reviewers of the S/95RM. The following two paragraphs address these concerns.

Logistic regression analysis was applied to the combination of Groups 1 and 2 to produce the final mortality function used in the risk assessment. The logistic function was in the form of:

$$\text{MORT} = \frac{(100) \exp(Z)}{1 + \exp(Z)}$$

where $Z = B_0 + B_1 * \text{TDG}$ and TDG is total dissolved gas. This can also be written as:

$$\text{Prob}(\text{MORT}) = \text{MORT}/100 = 1 / [1 + \exp(-Z)].$$

This model relates the probability of occurrence of mortality against the regressor (independent) variable total dissolved gas. In analyses where the response (dependent) variable is binary, such as live or dead at the individual fish level or proportion dead at the experiment level, the logistic regression is preferred over ordinary least squares and weighted least squares. This is because the assumptions of constant variance and of linearity of regressor variables cannot be maintained when the response variable is dichotomous

(Aldrich and Nelson 1984). Logistic regression doesn't require these assumptions. It is a non-linear approach that allows the error variance to vary systematically with the level of the regressor variables, being largest when resulting predictions approach 0.5 and smallest when resulting predictions approach 0 or 1. Logistic regression provides unbiased parameter estimates with minimum variance, and valid hypothesis testing for significance of model parameters. A logistic function produces a sigmoidal curve that automatically satisfies the constraint of the response probability ranging between 0 and 1. Parameters for the regressor variables are determined by maximum likelihood estimation. Therefore, for determining a mortality function, the most statistically and biologically appropriate approach was to use a logistic function and logistic regression.

With a binary response variable, there can be no assumption of normality on the model errors (Myers 1989). Since the response variable can only take on one of two values (*i.e.*, 0 or 1) for each individual, there can be only one of two subsequent outcomes available for the error term for each individual. Therefore, the distribution of residuals will be discrete and not normal. In Myers (1989), the theoretical variance of the residuals is shown to be distributed binomial. This factor needs to be considered when reviewing residual plots. For example, in the 120-125% TDG range, a total of 55% of the experiments (12 out of 22) had mortality levels of 0 to 2%, and 14% of the experiments (3 out of 22) had mortality levels above 20%. At the upper end of this TDG range (125% TDG), the logistic function predicted a 7% mortality. The residuals around this prediction curve have many narrow residuals below this curve and relative few wide residuals above this curve. This general pattern of residuals is not unexpected given the low value predicted for mortality at this TDG level and binomially distributed residuals.

- 7) Literature related to the effects of intermittent exposure are summarized on pages 22-23 of the S/95RM. We will include additional references in the final report including data provided by Beyer et al. (1976), Meekin and Turner (1974), and other research. An important finding of the NBS research in Lower Granite Reservoir in 1994 is the trend of a diurnal vertical movement of smolts from shallower depths during the day to deeper depths at night. These data may indicate that tolerance of juveniles to high TDG is increased by these diel movements of smolts to deeper compensatory depths. For example, Knittel et al. (1980) found that juvenile steelhead could recover from TDG saturation in the range of 125-130% by remaining at 3 m depth a minimum 3 hrs and to recover from TDG of 120% a minimum of 1-2 hrs.
- 8) We are not aware of the additional literature you are referring to in your comments. The June 1994 panel of gas supersaturation experts discussed the significance of signs of gas bubble disease in juvenile and adult salmonids and what these signs mean for short- and long-term survival. The panel found that little is known about sublethal and behavioral effects both in the laboratory or the river system, and that more research is needed. In response to the question of whether the severity of GBD can be quantified based on the presence or absence of specific signs, the panel found that the severity of damage or probability of death is poorly quantified by the presence or absence of specific signs and there has been no adequate review of what the signs are and how to quantify them. Most of the subtle signs that could be early indicators of problems for fish survival are not well documented and require more study. In summary, these comments from the gas panel illustrate that further investigation is needed before a threshold of external observations indicating impending mortality can be developed.

- 9) DEQ was provided a copy of NMFS's monitoring plan after you sent your letter so you are apparently aware that the deep (0-18 ft) live cages have been incorporated into the 1995 monitoring program. Holding of juveniles beyond the four day period is not recommended because according to Earl Dawley holding juveniles beyond four days reduces fish health and confounds results. It is also impossible to have a valid control under these conditions.
- 10) The November 1994 expert panel on gas supersaturation identified important elements of a physical and biological monitoring program and research for 1995 which were incorporated into monitoring and research plans for 1995 by NMFS in coordination with the state, federal, and tribal fishery agencies, state and federal water quality agencies, and the Corps.
- 11) You have been provided the pertinent reports (TRG 1992 and Mundy et al. 1994) that have reviewed the effectiveness of transportation as a recovery tool of Snake River salmon. I am also providing you recommendations provided by ODFW to the Power Planning Council last year to amend the Fish and Wildlife Program (Attachment 8) that includes ODFW's position on transportation and rationale. Additional reference material and discussion of concerns with transportation is provided in CBFWA's comments on proposed amendments submitted to the Council (Attachment 9). ODFW does not support continued transportation of juveniles in the Snake and Columbia rivers because there are no conclusive data to substantiate that fish survival to spawning grounds is improved with transportation.

February 2, 1995 Memo "Review of Flow Relationships in Spill and Risk Management 1995"

We appreciate you pointing out the error for 1982 in the analysis of conversion rates of adult spring chinook vs flow, spill, and TDG which has been corrected. This correction, however, does not change the conclusion from this analysis that no relationship exists between the survival index of spring chinook between Ice Harbor and Lower Granite dams and flow, spill, and TDG and that an above average conversion rate occurred in 1982 (0.867 vs 0.832 average for 1982-94) coincident with the highest average TDG measured in May of any year (122.9%).

February 3, 1995 Memo "Review of Adult Analysis in Spill and Risk Management (1995)"

We do not agree with your comment that the depth compensation assumptions are in error. I agree that Nebeker et al. (1976) and Bouck et al. (1976) did find significant mortalities for adults held in 0-1 m tanks, but I do not agree that the mortality rates at 115-130% TDG found in these studies for adults held at constant 0-1 m depths throughout the experiments can be applied to natural conditions where adults may occupy varying depths on a daily and seasonal basis. In our analysis, we assumed a 10% depth compensation per meter which is the most commonly used. Under this assumption, no mortality would occur at 120% TDG. Using data provided by Gray and Haynes (1977), we estimated that adult spring chinook spend 5.3% of time between 0-1 m at 120% and 11.8% of time between 1-2 m (Table 12). Since fish spend only 17.1% of time between 0-2 m, this means that 82.9% of time is spent at compensatory depths. Because the majority of time is spent at compensatory depths which increases tolerance of fish to high TDG levels, we assumed that there would be a 1 meter depth compensation at 0-1 m depth, 2 meter depth compensation at 1-2 m, and 3 meter depth compensation at 2-3 m which was used to develop the adjusted TDG's in Table 15 of the S/95RM. Your suggestion for a 0% depth compensation at 0-1 m, 10% at 1-2 m, and 20% at 2-3 m would result in unrealistically high mortality estimates that do not fit with field observations. For example under these assumptions,

Robert P. Baumgartner
April 7, 1995
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7.4% of the spring chinook population would be predicted to die at a TDG of 115% which is not validated by any field observations on mortality or symptoms observed in monitoring programs cited in the S/95RM. I would be happy to meet with you to further discuss this or alternative analyses with you.

Again, I do appreciate the time you have taken to review the document and feel your comments will improve the final report.

Sincerely,

Raymond R. Boyce

Raymond R. Boyce
Fish Division

Attachments

c: Russell Harding, Gene Foster (DEQ)
FPAC
DeHart, Nigro

February 24, 1995

Ron Boyce, ODFW
2501 SW 1st Ave.
PO Box 59
Portland Or. 97207

DEPARTMENT OF
ENVIRONMENTAL
QUALITY

NORTHWEST REGION

Re: Comments, Spill and 1995 Risk Management.

Dear Mr. Boyce:

In our previous meeting you requested that the Department provide specific comments on the Spill and 1995 Risk Management document provided as part of the hearings record relating to proposed modifications to the Total Dissolved Gas standards for the Columbia River. This letter provide comments that should help the Departments understanding of the information presented and the inferences developed in the document. You have been provided rough drafts of detailed comments, further drafts of detailed comments are included. The detailed drafts may be used to understand the reason for the specific requests. Your review of the detailed draft comments would be appreciated, especially if you could point out where the review is inconsistent with you interpretation of available data and literature, or where further data or literature review could improve the Departments understanding of the problems facing the Columbia River Salmon.

There are eleven (11) specific recommendations identified in no particular order. From previous debates I would expect that comments 11, 5, and 1 warrant the most attention.

1) Is it possible to provide greater review of the available data and information that would support the contention greater survival is associated with greater flow (discharge)? The greater survival data should be presented for both adults and juveniles. If your evaluation could describe how you addressed auto-correlation between variables, such as spill and TDG, it would be helpful. Where appropriate the presentation of cited information either graphically or in tables would be helpful. When comparing adult returns to spill/TDG encounter as adults could you help us separate out the effects of potentially different ocean survival or harvest rates?

2) From discussion with Bob Heineth (CRITFC) it appears that substantive information is available that would indicate residence time is reduced by spill, even if water velocity is not. Reduced residence time would reduce exposure periods and may therefore increase survival. Does such information exists, and could it be discussed?

3) The juvenile survival calculations were difficult to follow. Could you step me through them in a simple manner or refer me to the appropriate documents.

4) A brief discussion, or appropriate citation for my reference, explaining how FPE varies at each dam and by season would be helpful. The base FPE and each project and how FPE would vary for spring and summer migrants should be presented. Will FPE goals of 80% be achievable at all projects?

5) Behavioral depth compensation greatly affects inferences drawn from available data. The document suggest behavioral depth compensation for both juvenile and adults. For example the risk assessment concludes that juveniles are not usually observed at depths of less than 1 meeter. As you know, behavioral depth compensation is controversial.



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February 24, 1995
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Water Quality Division
Dept. of Environmental Quality

Greater efforts to illustrate the available information describing behavioral depth compensation would be helpful.

6) Could you state whether you used the equation for "group 2" data to develop the mortality function, or if not, which regression was used. Could you critique my concerns with the use of recent bio-assay data. Could you present your residual analysis and how the relative error influenced you judgement? In the discussion of the mortality function could you contrast the exposure periods with exposure period for migrating fish?

7) There appears to be limited data describing repeated temporal exposure. Any further discussion on the ability of a fish to recover between exposure periods would be helpful.

8) There is, apparently, greater literature supporting the relationship between external signs of GBD and sublethal mortality. Could the data from some of the cited literature be presented to indicate what thresholds of external observation would provide an indication of impending mortality?

9) Is it possible to incorporate deep volition live cage bio-assays into the monitoring design. Although we all recognize several inherent problems with live cage bio-assays, these assays provide the basis for justifying increased TDG beyond 110 or 115% TDG. It would appear reasonable to use any opportunity to increase the available data on live cage bio-assays.

10) Please discuss the NMFS expert panels recommendation for monitoring, what was incorporated into this seasons monitoring, and what was not. For those NMFS recommendations that are not incorporated could you please explain why?

11) The EQC elected to allow discussion of transport issues when deliberating on a proposed instream TDG criteria. The Spill and 1995 Risk Management document did not discuss the benefits, or concerns, with transportation. The document appropriately reflected the DEQs positions as presented in previous EQC hearings for a focus on instream conditions. However, the EQC elected to expand their deliberations. In what I acknowledge is a difficult task, and the most important in these comments, could you please as efficiently as possible describe your concerns with transportation.

As a final note, I have accepted another position within DEQ. Because of the responsibilities of the new position my role in the TDG issues will be phasing out. During the transitional period, and until it becomes certain who in DEQ will undertake the TDG issues, it would be appropriate to copy Mr. Gene Foster of our office on all correspondence.

Sincerely,



Robert P Baumgartner
Manager Technical Services
Northwest Region DEQ

rpb
Enclosure: Draft Detailed Comment
cc: Eugene Foster, SAS, ODEQ - 40-WP

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Date: February 6, 1995

To: File

From: Baumgartner, Robert P

Subject: Review of Spill and 1995 Risk Management.

PREAMBLE:

The document Spill and 1995 Risk Management was received as part of a hearings record relating to the departments proposed rule modification. Although the Spill and 1995 Risk Management document recommends a TDG criterion of 120-125% TDG the Department's review will not determine a proposed criteria. The document was not received as part of a proposal for modification of TDG criteria as allowed under the modified total dissolved gas standard for the Columbia River. The review has not included opportunity for scientific and public comment on a proposed criterion as required by the modified TDG standard. The review will provide the Department critique of the information presented, identify areas where further information would assist the Departments review, and provide supporting discussion where appropriate.

The Spill and 1995 Risk Management document identifies that TDG levels in the range of 130%-135% approach a balance of mortality from TDG and from turbine passage. The Risk document proposes a TDG level in the range of 120-125% TDG. This review does finds that the range of TDG of an 12-hour 120 TDG, with a maximum of 125% is within the range of TDG criterion that would provide a reasonable balance of the risks to aquatic life with the calculated benefits of spill. The TDG levels in the range of 120-125% appear to approach a threshold above which available instream bioassays infer significant mortality may occur. Lower levels of TDG provide less risk of direct and indirect mortality, but from the information presented in the Risk document, reduce the benefits to higher fish passage efficiency at hydroprojects.

Overall Comments:

The document Spill and 1995 Risk Management is not a risk assessment or an uncertainty analysis. A rigorous risk analysis provides measures of the probability of an occurrence of various degrees (mortality) occurring, and the probability of an organism being present to accept the risk. A rigorous risk assessment requires reasonably sound data on the relationship between impacts and dependent factors used in the risk assessment, and the probability of occurrences (probability density functions). To be reasonably accurate the interactions and relationships

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between dependent variables needs to be understood. The information needed to conduct a rigorous risk assessment was not presented in the document, and may not be available.

For example, several of the mortality rates for turbine passage are presented as single values. With only one measurement it is difficult to be certain of the accuracy or repeatability of the observation. If multiple measure were taken, they should be presented.

The spill and 1995 Risk Management document does provide useful information. The Fisheries agencies described, based on literature review, observational data, and empirical modelling, the basis and rationale for their recommendations on an acceptable level of TDG of 120-125%. The document allows review of the uncertainty in the interpretation of information used to development of the 120-125% TDG recommendation. A TDG level of 115% with a maximum of 120% provide a margin of safety from potential mortality due to TDG, but limit the calculated benefits of survival past a dam to instream migrants from spill as compared to turbine passage.

Because of the difficulty in extrapolating data from controlled studies to field conditions, and the Departments observations of rapid increase in mortality measured in deep tank bio-assays between 120 and 125% TDG, the review does not agree that mortality estimates presented in the range of 120-125% are gross overestimates of mortality. The evaluation of risk based on the instream bio-assays is similar to those presented earlier by the Department. This evaluation suggest that TDG levels in the range of a 12-hour average of 120%, with a maximum of 125% TDG are within a reasonable range of risk for consideration of alternative criteria. However, this range may approach a threshold for TDG. Casual observation and empirical analysis suggest rapid acute response in live cage bio-assays as TDG increases near 125 TDG.

The reliance on instream data places less emphasis on a larger body of literature conducted under more controlled laboratory studies. The mortality from bio-assays can not be accurately extrapolated to estimate system mortality. The available data suggest that mortality rates can increase rapidly beyond a threshold. Because of the apparent rapid response there is inherent risk in managing close to an acute threshold. Without argument, more data on fish distribution, behavioral response to obtain depth compensation, the effect and recovery from intermittent exposure, and reach survival data would be useful. Similarly there is limited information of sublethal effects that may lead to secondary mortality such as predation. This data is

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not currently available, but may improve with time.

The State and Tribal fisheries managers recommendation of a TDG level of 120-125% is based principally on:

- ▶Results and interpretation of a mortality function from in-situ volition cages or cages with depths restricted to greater than 1 meeter compared to calculated mortality past dams from spill and turbines,
- ▶Cursory observation of adult and juvenile population indices,
- ▶Integration of a study that provides adult depth distribution as a function of TDG and mortality, and
- ▶Integration of biological monitoring data to support spill decisions

Because of the importance of the mortality functions in the risk assessment an attached memo provides greater detail of the review of this section. In general comments observed that:

- ▶The mortality function is taken as an absolute, which would lead to underestimates of mortality if exposure times of fish are greater than those used in the bio-assays.
- ▶The population calculations could not be verified
- ▶The method used in the risk assessment to incorporate exposure time needs more explicit definition.

The overall effort is, by necessity, a simplification of the balance of risks. The assessment assumes the 120-1255 TDG level can be maintained at 80% FPE. This assumption may not be accurate for all projects. The potential benefits should be recalculated to account for those projects where 120% TDG can not be achieved with spill equal to the 80% FPE.

The review provides cursory evaluation of historical data on adults and juveniles. The data presented does not suggest that substantially greater mortality is associated with the higher flow years. The data provided does not support a conclusion or inference of greater adult returns or juvenile survival as correlated with high flow.

There appears to be a substantive body of literature relating increased discharge to reduced travel times, and increased survival. The risk assessment could increase the discussion of

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the relationship between increased discharge and survival. Personnel communications with Mr Heineth (CRITFC) (1995) suggests that spill, as opposed to discharge, may act to decrease travel time, and thereby decrease exposure periods which in turn may increase survival.

The adult and juvenile indices are presented for a limited number of years. If available, the adult and juvenile indices could be expanded to support the theory of greater survival during periods of higher discharge. The data should be used to attempt to separate out the effect of increased discharge and TDG. Greater survival at high discharge can not be interpreted to indicate greater survival at low discharge and higher TDG unless the differential mechanism of the effect of travel time and TDG on survival are understood. The potential benefit of spill on reduced travel time, even during low discharge years, appears to provide a mechanism for increased survival that is not directly accounted for in the risk assessment.

The method used to relate adult risk is discussed in greater detail in an attached memorandum. The adult survival indices, table 11, contain a numerical error that needs to be corrected. Adult risk was assessed by relating the adult distribution as a function of TDG reported in one study to the mortality rates reported in another studies to TDG levels as modified for depth compensation. The simple depth compensation method reduces TDG by 10/% per meeter as recorded at the top of 1 meeter section. This method results in inconsistent results when compared to the studies for which the mortality rates were calculated. The calculated mortality is therefore inconsistent.

This review does not agree that the applied method indicates no risk of mortality to adults at TDG of 120%. At 120% TDG some risk would occur to, as indicated by the review by the fisheries agencies, to a proportion (5%) of the migrating adults would occur. The proportion of the population affected by TDG depends in part of the depth distribution. Although 5% of the population was calculated to be affected we do not know how frequently the population distribution is re-established. As the population moves and re-establishes its distribution other individuals will be placed at risk. At 115% TDG the exposure time required to generate mortality would likely preclude an substantive risk to migrating adults.

The rest of this document will provide comment and discussion of the Risk Assessment by section and page number.

Preface:

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The prefaces states that "the fishery(ies) Managers strongly recommend implementation of this spill program, as spill is the only alternative left to reduce hydrosystem mortality."

The fishery(ies) managers, and their responsibilities (authority) should be explicitly defined. I assume that the fishery(ies) managers include the State and Tribal agencies. Does the term also include the National Marine Fisheries Service? and the U.S. Fish and Wildlife Service?.

Is the spill the only alternative left, does this mean options for greater volume for fish migration, or for drawdown of reservoirs are not available?

The intent of the reliance on spill is not clear. The Risk Assessment does not imply an complete shift to spill as the only means for transport. A review of the hydrosystem transport question by Mundy et al (1994) provides some pertinent questions. First, is there a survival index that is agreed upon by the fisheries managers that describes the rates of recovery of the threatened and endangered salmon populations?

If such a index exists it would provide a useful reference for a risk

assessment. Secondly, is the proposed spill program a component, perhaps neglected, of the concept of "spreading the risks"? If the spill program is inherent to spreading the risks, then clarification of the risk spreading concept is in order.

The review by Mundy et al (1994) suggest that the relative benefits of spill and transportation are dependent on in-river conditions. The benefit to survival of spill may be relatively greater in years of higher flow (reduced residence time).

The document observes that "Without spill, between 30% and 92% of a given population of fish will pass through the turbines....". This appears to describe fish passage efficiencies of 70% to 8%. This range of FPE appears substantively different than those cited by Anderson of 34%-68% as part of comments to the DEQs proposed TDG rule modification.

Without a conservative standard for hydroelectric project passage survival that can be related to rates of recovery of the threatened and endangered salmon populations, and without estimates or measures of the effects of alternative means of reducing hydroelectric system mortalities, the utility of transportation for recovery of ESA listed salmon populations can not be objectively judged.

.. "spreading the risks means developing an optimum strategy for minimizing the mortality inflicted on smolts by the hydroelectric system subject to the constraints of avoiding extirpation and bankruptcy. Developing an optimum strategy means using and understanding all mitigative means permitted by the system of constraints.

1 Excerpt from Mundy et al. 1994

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It would be helpful to clarify the base condition for FPE, and how that would vary under different spill programs. If the FPE varies by season (spring vs summer) then the influence of the base conditions needs to be clarified in the calculations of benefit to survival from spill in latter sections of this document. Similarly, if variation in FPE can be influenced by management activities at the hydroprojects, then these alternative should be discussed.

The proposed monitoring program should reference and compare the proposed monitoring to the recommendations of the National Marine Fisheries Service (NMFS) expert panel recommendations.

Introduction:

The project proposes an objective of 80% FPE "at each federal hydroelectric facility designed to achieve the 80% FPE objective. However, pg 12 observed "based on the potential for adverse hydraulic conditions the 80% FPE may not be attainable at the ice harbor and The Dalles dams". It would help clarification to compare the base FPE and proposed FPE at each dam specifically.

On page 5 there is a limited discussion of spill reducing the predator/prey interactions, assumed to mean reduces predation of migrating salmon. And that spill results in higher velocities which results in reduced time dependent mortality. There appears to be substantive literature discussing the influence of discharge and travel time on mortality. From this discussion it is not clear how spill, as opposed to discharge, will increase velocity?. Velocity is usually a function of volume/discharge. Spill would not necessarily change discharge. Spill may act through mechanisms other than velocity to decrease travel times. This discussion could be expanded to provide additional clarification on the effect that spill could have to reduce predation by dispersing predators at the tailrace and by decreasing travel time.

Pg 6.

The assessment stated that "the historical record demonstrates that better adult returns of chinook occurred during years when juveniles migrated under high flow and spill conditions". This statement is not well supported by the information presented in the risk assessment. The Risk assessment could be expanded by utilizing currently available data to support this conclusion. The risk assessment should further clarify, if possible, the differential impact of discharge and spill on survival. An observations of increased survival under high spill/ high flow years does not provide an indication of improved survival under

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low discharge and high spill, or that survival could be enhanced by increasing spill under high flow years. Similarly, effects of ocean conditions, adult harvest and other independent factors need to be accounted for when assessing adult returns as associated with the flows encountered as juvenile outmigrants.

Pg 7 and others

On page 7 it is stated there are behavioral factors that allow salmonids to withstand what otherwise might be harmful levels of TDG. This is an important, and controversial finding. The question of behavioral avoidance of elevated TDG, especially if achieved through hydrostatic compensation, affects the interpretation risk from field and laboratory studies. The discussion should be expanded to include some of the recent work by Fiddler on mechanism (gas bladder inflation) for avoidance in small fish. To avoid criticism of bias in the literature review it may be useful to discuss those studies or observations indicating a failure to avoid impact from TDG.

Although the mechanisms for avoiding the impact of TDG are not known, there is some evidence that where suitable habitat conditions exist fish may avoid some of the impacts of elevated TDG. Fidler (1994) observes that in the Columbia River below the Hugh Keenleyside Dam in southern British Columbia has levels of TDG approaching >145-150 TDG at various times of the year. However, it is a deep river and surveys indicate that only 3% of the captured resident aquatic life showed mild symptoms of GBT (Hilderbrand 1991 in Fidler (1994)).

It is not clear why in several volition cage studies that fish appear to avoid some of the impacts of elevated TDG. However, it is also apparent that in some assays fish could have compensated for elevated TDG, but suffered mortality. For example, Ebel (1971), observed that fish in volition cages suffered greater mortality than fish held at fixed depth. This data suggest that these fish were unable, or unwilling to avoid supersaturation. However, other laboratory and field studies indicate that fish avoided the effects of elevated TDG. Recent work by Fiddler suggest that small fish may achieve hydrostatic compensation by responding to swim bladder over inflation. However, as fish size increases this mechanism for depth compensation is no longer effective.

Pg 7 and others

The Risk Assessment states that intermittent exposure may increase the level of gas supersaturation fish are able to tolerate. This discussion could be clarified. The important

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point appears to be that most studies, and therefore interpretation of the data, are conducted under relatively constant exposure levels. Intermittent exposure, since it allows a period of recovery, is less damaging than continuous exposure. However, as pointed out by Fidler (1994), once a bubble forms, it can continue to grow even at lower levels of TDG than what created the bubble. This observation indicates that intermittent exposure makes a fish less able to tolerate a given level of TDG.

Intermittent exposure provides opportunity for recovery to occur. Fish experiencing intermittent exposure due to diurnal vertical migration may experience some recovery benefit from changes in depth. Although the volition cages may have to some degree simulated the diurnal changes of fish, additional benefit appears to have been obtained by fish in deeper (4 M), as compared to shallower (<3m) volition cages (Weitkamp 1976). The benefit may have been due to the greater hydrostatic compensation achieved and the subsequent compression of any bubbles formed. Fidler (1995) notes that bubble growth would stop or reverse only after the fish moves to a depth below that at which growth began. In the case of cardiovascular bubble this could be 1.2 meters below the threshold for bubble formation.

III Risk Assessment, Background

Pg 15

Page 15 states that the TDG standard was "... adopted with the protection of shallow water organisms in mind".. This statement is misleading, since it implies that the standard was adopted with only shallow water organisms in mind, and such a statement is clearly false. The standard was adopted with both deep water and shallow organisms in mind. The information reviewed in previous staff reports summarizes the development on the standard. The fish agencies may believe that the new information on the effectiveness, or lack thereof, may justify a review of the risks associated with the standards. Similarly, such a review could focus more information on depth compensation. However, the development of the standard did incorporate the effect of depth compensation in the evaluation of data used to develop the standard.

Pg 18, Progression of GBD relative to mortality.

The fisheries agencies believe that external signs appear to be a good indicator of when dissolved gas levels are having an impact on fish in sublethal laboratory environments. The findings of the National marine Fisheries Service Expert panel was not favorable for the management of the river based on external signs

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of GBD. The risk assessment, however, cites several documents to support this conclusion. The information relating the presence of external signs to sublethal exposure, and the ability to conclude that lethal exposure has not occurred should be further described.

It appears reasonable to assume that external signs would occur at lower TDG levels than internal symptoms of GBD. That external signs occur at lower TDG levels is apparent in equations for signs of GBD in relationship to total pressure as developed by Fidler (1984). These equations suggest that external signs would develop prior to bubbles being observed in the vascular system which may rapidly lead to mortality. However, external signs in a portion of the population do not indicate internal symptoms do not exist.

The findings of the NMFS expert panel relative to reliance on management decisions on external (and internal) signs of GBD needs to be incorporated and discussed. The critiques of past monitoring, and incorporation of results from the NMFS expert panel on monitoring needs to be incorporated and discussed. The importance of having biological data to relate to the observed instream TDG needs to be discussed, especially since this data and information may be used to better understand risk, and the impact of elevated levels of TDG on aquatic life in the Columbia. Such information may be used for future criteria modification.

The risk report discuss the limited data on the relationship between predation and TDG. The recently completed study by Colt et al (1995) describing the predation response by Rainbow trout under various levels of TDG should be incorporated and discussed. My understanding is that this document suggest that predation of exposed rainbow trout was significantly higher at dissolved gas approaching 130%.

Pg 22, Spatial and depth distribution.

The data used (Gray and Haynes 1977) to determine that adult depth compensation as dependent on TDG should be discussed. The data appear to have been interpreted to show behavioral hydrostatic compensation by adults. One of the important aspects of the relationship between mortality and TDG level is the time of exposure. Information contained in Gray and Haynes (1977) or other studies of adult salmonids should be reviewed to determine if the time spent within a depth range can be determined. It would be important to know whether a fish spend as long as 12 continuous hours within shallow water since this could define the exposure period under 12 spill occurrences. However, with the available data, we can not assess the impact of repeated exposure

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to sublethal combinations of exposure levels and duration.

Pg 25, Inferences from observational data.

The available data should be presented in greater detail to support the contention of higher survival associated with high flow, spill, and TDG. The data should be used to, as possible, separate out the effect of spill vs flow. The attached memo provides more specific comments.

Pg 31 +

I was not able to verify calculations on juvenile survival, or mortality. A more explicit discussion of where fish enter and exit the system would be helpful, and a more explicit example of the mortality calculations would be helpful.

Pg 38.

The Risk assessment claims the mortality function indirectly incorporates exposure period. There is no time term in the equations, and it makes it difficult to determine how the risk assessment incorporate duration of exposure. To use the model requires the assumption that absolute mortality is represented in the empirical correlation between TDG level and in-situ bioassay results. Mortality would have been greater under longer exposure periods. At least some of the tests were at time periods less than the probable travel time of juvenile salmonids in the river and the assumption of absolute mortality may therefore underestimate instream mortality. Similarly, the longer duration tests may overestimate mortality.

Pg 41

I do not understand the assumption that "mortality due to gas is instantaneous", perhaps that assumption would be clarified by more explicit examples of the mortality calculations starting on page 31. As noted for page 38, it appears that the mortality observed in the field studies is absolute, but we know if the studies had continued for more time, greater cumulative mortality would have been expected. Depending on the residence/exposure period this exercise could underestimate risk, if exposure is typically longer than that of the in-situ studies, or underestimate mortality if exposure is much less than that of the field studies.

The juvenile data referred to should be presented to illustrate that survival studies do not indicate mortality is occurring.

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Pg 43. I do not understand how the calculations worked in the first full paragraph. The equations should be defined. The narrative states that exposure time was incorporated by applying the mortality function to the population passing Ice Harbor Dam, and population passing Bonneville dam.

How does that incorporate rate? there is no time function?

It would appear that the population passing Bonneville is:

The population passing Ice Harbor Dam (From the Snake)
+ The Columbia Population
+ Other Tributary populations
- Mortality
- Out of system transport

The use of just the Ice Harbor passage counts to calculate mortality would ignore the effect of mortality from Lower Granite, Little Goose and Lower Monumental and their perspective reaches. These are three of the eight dams that the Snake River Fish need to pass, where these dams excluded in the assessment?. Do the benefits calculated account for just the increased survival by passage at just the remaining dams (Bonneville, The Dalles, John Day, and Ice harbor)?

The document implies that the calculations apply to just the population passing two of the dams, Ice Harbor and Bonneville. If the mortality function occurs for just the difference between the Ice harbor population and the Bonneville population, this would be a numerically and theoretically incorrect application of a rate adjustment. This exercise would artificially reduce the population facing density dependent mortality, but not account for time and therefor not account for rate.

This paragraph needs to better describe the calculation used to attempt an adjustment for rate.

Pg 59, Discussion of adult impacts are contained in a attached memo. The adjustment for depth compensation is inconsistent with the data used to determine mortality rates and therefore may lead to erroneous conclusions. Similarly, a numerical error is contained in table 11, which may lead to erroneous conclusion. There should be an increased illustration of available data to support he contention of improved adult survival associated with spill. Where possible, the differential affect of increased discharge as opposed to spill should be evaluated.

Pg 64+ Monitoring plan:

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It appears that the state/tribal fisheries agencies and the FPC have unilaterally taken on much of the biological monitoring program. The results of last years efforts appear to provide information that can be used to improve the efforts of this year efforts.

The monitoring plan could be more explicit in describing which agency will be responsible for conducting which components of the monitoring plan. The frequency of monitoring should be more explicit.

The relationship between external signs of GBD and sub-acute conditions of TDG is not clear. Is it possible to describe a threshold where the degree of sub-acute external signs of GBD can be used to preclude substantial mortality? The intended use of the data should be explicitly defined. It the data is to be used to assess the degree of impact the objectives and use of the data should be defined. If the data is presumed to be assessed during the season with the potential for mid-season adjustment in the spill program, then the adjustment thresholds should be defined.

Much of the scientific community, as indicated by the NMFS working group, does not apparently believe a relationship exists between the observed external signs of GBT and the risk of mortality. Similarly, the external signs of GBT monitoring data has been criticized because of the potential bias in the data as a result of hydrostatic compensation associated with the monitoring location. The "working group" made recommendations for instream monitoring and controlled studies to improve our understanding of the relationship between signs of GBD and risk of mortality. It is not clear if some of these recommendations are included in the monitoring plan.

The NMFS convened an "working group" to evaluate and provide recommendations on biological and physical monitoring. The monitoring section should summarize the results of the NMFS expert panel and discuss how this information has been incorporated.

The NMFS expert working group recommends observations of the gill lamellae using dissecting or compound microscope and standard, non lethal protocols and observation of the lateral line using a dissecting microscope or magnifying visor according to a standard protocol. If the Department/Commission acts under the proposed rule then a finding of adequate monitoring will be needed. It would be useful in making such a decision for these observations should be included into the monitoring plan, or their exclusion explained.

The NMFS "working group" failed to review or comment on instream bio-assays. This oversight is unfortunate since the instream bio-assays provide the basis for recommending TDG levels in the range of 120-125% TDG. I am, however, concerned with the design of the bio-assays. Although the monitoring strategy suggest that the results of the instream will not be extrapolated to represent river wide populations., However, that is exactly what previous sections of the risk assessment report has done with preliminary results of the last years bio-assays.

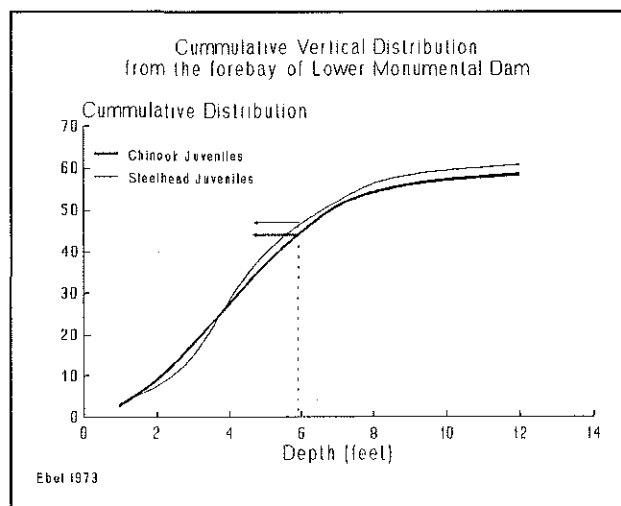
The data from last year are impossible to obtain and verify in a reasonable manner. The bio-assay data presented in the Risk Assessment are substantially different than previous results. The NMFS has refused on several accessions, most recently as part of the Departments review of information presented during a public comment period, to provide data to DEQ for verification.

The 4-day period is too short to determine mortality rates. The cumulative mortality, except under extreme duress, would be much lower than could occur in longer exposure periods. However, such data is being used to indicate absolute mortality in the Risk Assessment. The use of a subsample of the migrating fish would appear to provide an indication of whether the fish are suffering mortality, and whether the potential latent period prior to mortality has been exhausted. However, the 4-day period may not be able to measure low mortality rates.

The volition cages restricted fish to depths of greater than 1.8 to 4 meeters. The restriction of 1.8 meeters minimum depth would restrict fish to greater depth, and greater hydrostatic compensation, than they may naturally use.

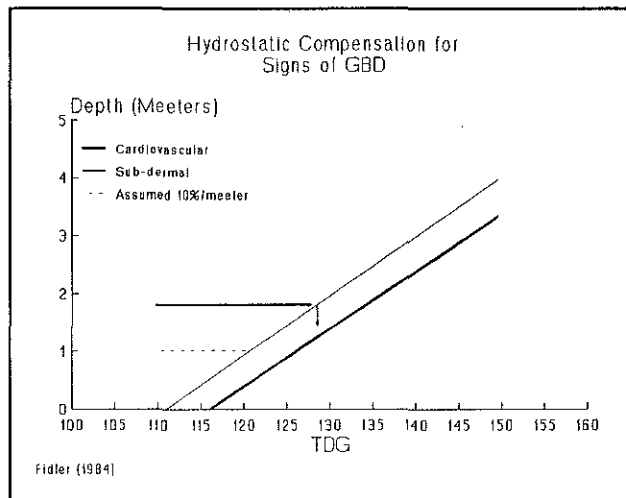
The depth distribution data reviewed in Weitkamp and Katz, show the 1.8 meeter restriction would restrict a significant part of the water column normally used by juvenile fish. As illustrated

in the cumulative depth distribution data from Ebel (1975) that 40-50% of these fish resided at depths of less than 1.8 meeters. Although we do not know how representative this depth distribution data is for migrating juvenile salmonids exposed to elevated TDG, it is reasonable to conclude that the 1.8 meeter



depth restriction artificially modifies the depth distribution.

The experimental design appears to artificially force depth compensation to limit the potential effects of GBD from occurring. The restricted depth of 1.8 meeters would provide a potential artificial depth compensation of 18% TDG (10% per meeter). The study appears designed to assure that fish are not exposed to the potential lethal affects of moderate levels of gas pressure.



Equations presented by Fidler (1984) may be cautiously interpreted to described the compensation depths below which signs of GBT will occur. Two of these equations are illustrated. The first for extracorporeal and subdermal emphysema. The second illustrates where bubble growth in the vascular system begins. Fidler reports that mortality is generally very rapid in this situation with time to mortality decreasing as TDG increases.

By applying these equations it appears that the 1.8 meeter restriction would prevent external signs of GBD unless fish were exposed to greater than 125% TDG. Since fish may have been exposed previously, then captured and held, the signs may result from the exposure prior to capture. Fidler 1984 and previous literature notes that in the case of extracorporeal bubbles that bubble growth would stop or reverse after the fish moves to a depth below that at which growth began. For extracorporeal bubbles this could be up to 0.8 meeters below the threshold depth for bubble formation. Fish exposed to levels of TDG that may create bubbles may recover, and not show the bubbles by being restricted to depths of greater than 1.8 meeters. The artificial compensation may result in fish who would otherwise show signs of GBD due to exposure to previous exposure to TDG greater than 120% recovering by artificial hydrostatic compensation.

The tests will include hatchery reared fall chinook when TDG levels exceed 115%. A four day test, would not be expected to generate results at exposure of 115% for 4 days, especially when fish are restricted to depths greater than 1.8 meeters. The latent period may be greater than the test period for moderate < 115 TDG levels of TDG and mortality may not be expected except at

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relatively high levels of TDG (>120).

The bio-assays are not designed to provide an indication of cumulative mortality, or mortality rates. However, that is how they are being interpreted and presented. The test appear to be designed with a heavy bias for achieving no indication of mortality under moderate TDG levels (115%). The intent and utility of this study needs to be clarified to assure that results are not misinterpreted.

Date: February 8, 1995

To: File

From: Baumgartner

Subject: Review of Juvenile Mortality Functions in Risk Management 1995

Mortality estimates from field bio-assays:

The "risk assessment" developed a mortality function by empirically correlating observed mortality as dependent upon several variables including TDG, Depth by class, species and time. The data were segregated into three depth categories of 0-3 feet, 3 to 9 feet, and volition cages of 0-7, 0-10, 0-13, or 0-18 feet.

The risk assessment found that the effect of exposure proved difficult to assess with the method and models used.

Depth was found to be a significant factor influencing mortality when all "depth classes" were used. The assessment excluded the data for "class 0" for fish held at 0-3 feet because " (A)t high levels of TDG, fish a highly unlikely to restrict themselves to depths of 0-3 feet. In addition, information relative to depth distribution suggest juvenile salmonids do not usually habit this shallow depth." The justification for the elimination of this data and the statements used should be better documented. Data demonstrating that fish do not inhabit this depth (3 feet) should be illustrated. For example, Ebel (1975) suggests approximately 15% of juvenile chinook salmon were encountered at 3 feet of depth or less in the forebay of Lower Monumental Dam.

The risk assessment, following elimination of the shallow water data, observed that depth was not a significant factor influencing fish survival. The assessment provides, however, an ironic conclusion that the highest mortalities observed at TDG occurred between 120-125% TDG are for studies were fish were held at depths between 0 to 7 feet of depth. Either depth is significant, or not, it would appear inconsistent to argue it is both not significant, and significantly important.

The Risk assessment compares the predicted mortality in field bioassay as an absolute as compared to an "instantaneous" (pg 41), mortality to the calculated in the differential mortality from a base conditions to an 80% FPE spill at the Columbia River Dams. The point where differential morality from spill equals increased mortality due to TDG is taken to be the point where no additional benefit from spill occurs.

Discussion:

The Departments previous evaluation of alternative TDG criteria, documented as attachments to EQC staff reports, provides part of the reference material used during this review. Since the comment contained in this review reflect, in part, the Department understanding of the available literature, some background discussion is incorporated into this review. Incorporating the basis for the Departments Comments provides the basis for the Departments comments.

From existing understanding of TDG and its effect on aquatic life it appears that both duration of exposure and hydrostatic compensation are important factors when comparing TDG levels to risk of mortality. Both laboratory studies and field studies provide information on depth and exposure. However, these factors did not come out as significant in the empirical analysis described in the risk assessment. The review of the empirical methods used to assess the available data agrees that inclusion of time does not increase the correlations observed between mortality and TDG. Similarly, when shallow water data are restricted, the inclusion of depth does not improve the relationship between observed mortality in live cage bioassay and TDG. However, as stated in the report, it can be reasonably demonstrated that both time and depth are important in understanding the relationship between potential mortality and TDG.

The literature reviewed by Jensen et al, (1986) provides an illustration of the importance of both depth and time on the acute (LC50) levels of TDG. The laboratory studies have been criticized because of the difficulty in interpreting the results of studies restricted to shallow depths of less than 1 meeter to the mortality rates that could occur in river where fish have much greater depth available for hydrostatic compensation.

Hydrostatic compensation is reported by Jensen et al (1986) and several other authors as a mitigating factor

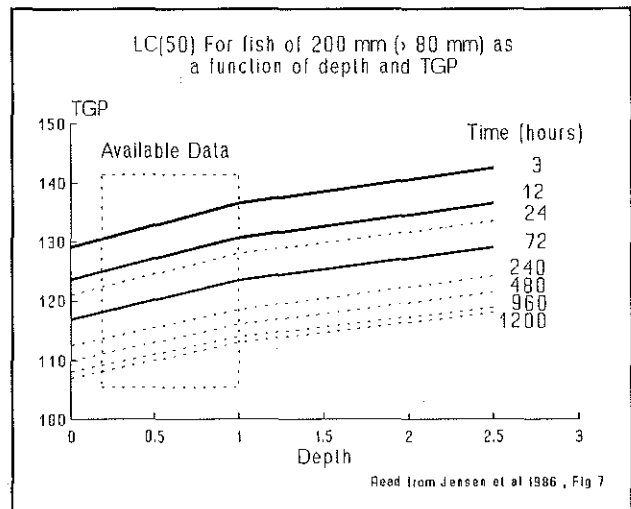


Figure 1 Acute (LC₅₀) response by TDG and Duration, Dose Response Model

for the effects of gas supersaturation. The physical reason is that bubble growth is dependent of the differential pressure at a given depth. The total pressure is the barometric pressure and the hydrostatic pressure of water at a given depth

$TGP\%_D = 100 \frac{(BP+\Delta P)}{BP+73.65\rho D}$, where 73.56 converts metric pressure to mm mercury consistent with barometric pressure.

Roughly, depth compensation is 10% per meeter, bubbles forming at 110% TGP would not form at 1 meeter of depth. However, once formed bubble growth would stop or reverse only after the fish moves to a depth below that which growth began. This is because once the bubble radius has increased growth can continue at pressure values lower than those required to initiate growth. In the case of extracorporeal water bubble this could be up to 0.8 meters below the threshold, and up to 1.2 meters below the threshold depth for cardiovascular bubble (Fiddler 1993).

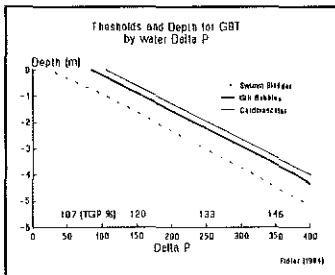


Figure 2, GBT thresholds

deeper water. These studies provided a demonstration of the means for compensating the effects of swim bladder over inflation, and thereby avoiding other potential symptoms of GBD. These studies found that as fish grew in size, there was less tendency to use depth of a means of compensating for TDG because the larger fish are able to vent gas and do not experience gas bladder over inflation.

Fiddler (1993) suggest that two separate threshold may exist for mortality due to TDG. the lower threshold corresponds to that at which the growth of extracorporeal interlamellar bubbles and subdermal emphysema of skin surfaces begins. The higher threshold correspond to that at which bubble form in the cardiovascular system begins.

The available field bioassay were previously reviewed by the Department. The Departments review indicated the importance of both depth and level of exposure on the reported mortality to

Similarly Fiddler (1984, 1998, in Fiddler 1993) describes the importance of depth (hydrostatic) compensation on the symptoms associated with gas bubble trauma. The compensation depth is dependent upon the GBT symptom. Fiddler observes that over inflation of the swim bladder is a problem for small fish (< 35 grams in weight) and mortalities are generally chronic in nature. Shrimpton (1990, in Fiddler 1993) observed that small fish would respond to over inflation of the swim bladder by seeking

test fish. The previous review focused on data presented by Weitkamp and Katz (1980).

Weitkamp and Katz (1980) reviewed "most" of the available literature relating to TDG and summarized regulation of supersaturation. Several field studies using live cages and deep tanks were summarized in the review by Weitkamp and Katz (1980). The results of these field studies conducted at, or allow fish access to, various water depth are illustrated in figure three. The reported range of TGP and depth are limited. The illustrated smoothing of the reported data were developed using multiple polynomial regression. In several cases the duration of the experiments was reported. Addition of duration in the evaluations did not substantially improve the explanation of observed mortality, perhaps because in only a few examples was number dying over time is reported.

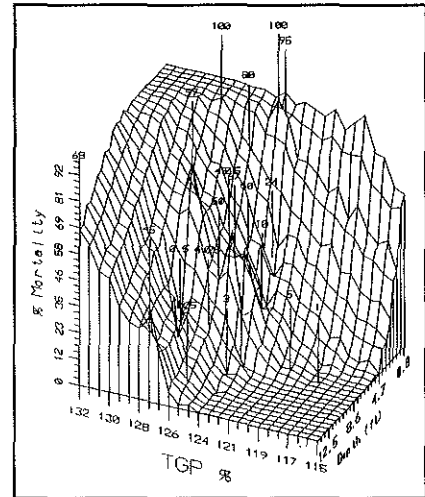


Figure 3 Live Cage Assay mortality by TDG and Depth

The illustration includes data from both fixed depth and volition cage experiments. Using the fixed depth bio-assays incorporates a potential bias in the results. Ebel (1971) found that juvenile chinook salmon held in 0-4.5 meeter volition (free access) cages suffered much higher mortality (45%-68%) within seven days than fish held in deeper water (3-4 meeters) (0%) suggesting that these fish were unable, or unwilling to detect and avoid supersaturation conditions. Fish held at fixed depth would artificially increase the apparent influence of depth compensation.

The response, measured as mortality, to TDG may be species dependent. The plotted results were for reported chinook mortality. In some of the summarized studies ranges were given for either TGP or mortality, and averaged conditions may have been used to plot reported conditions. The illustrated data suggest that information similar to that reported for laboratory studies. Significant mortality can be expected at relatively low levels of TGP (> 115 %) at moderately low depth (> 5 ft). As depth increases the apparent mortality increases with increasing gas pressure above 120 to 125% TGP. The range of TGP or depth for interpolating the data is limited. Extrapolation of the data is limited by the lack of data at greater depths or higher TGP. The studies were conducted for different duration, and mortality

rates are not reflected. Longer studies may have resulted different impressions of relationships between mortality and total gas pressure.

Studies by Weitkamp (1977) appear to provide in part, the basis of the information indicating that chinook salmon migrants spend adequate time at or below compensation depth to avoid significant mortality up to the range of 120-125% TGP. In these studies some of the fish surviving the test showed signs of GBD. The frequency of indication of GBD (mortality + signs) increased with increasing TGP above near 120%, and decreased with available depth. In the studies there was no significant mortality in cages allowing access to 4 meters deep, however 38% of the test fish showed external signs of GBD by the end of the third test when TGP reached near 124.5% for 10-days.

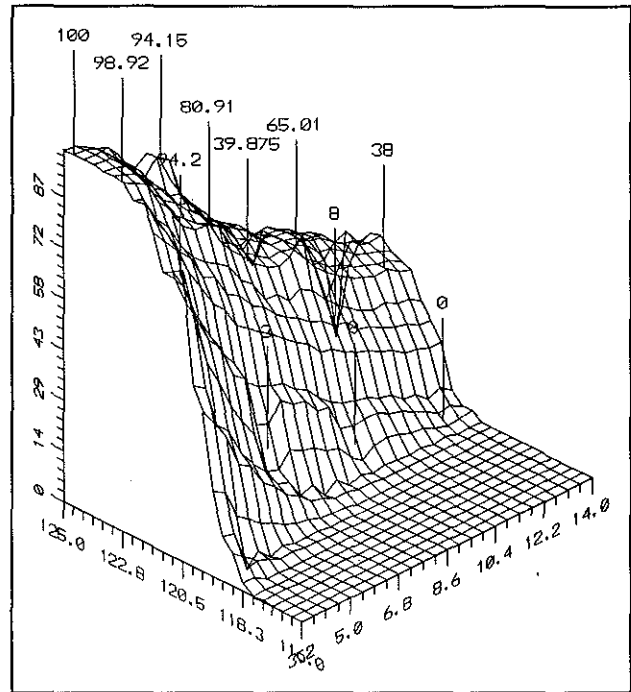


Figure 4 Signs of GBD by Depth and TDG from Weitkamp, Smoothed by Multiple polynomial regression

The TGP recorded by Weitkamp varied throughout the test periods. This variation provides some difficulty in comparing the different results to TGP levels. However, it also provides an indication of recovery. In one test when TGP approached 124.5% for a 10-day period at the end of a 20-day test, 38% of the fish showed signs of GBD in 4 meter deep volition cages. In another test the initial TGP levels were above 125% during the first 10-days, but dropped to near 120% at the end of the study only 8% of fish in 4 meter deep volition cages showed signs of GBD. It would appear that either the elevated gas pressure levels did not last long enough to overcome a response threshold and signs of GBD did not occur, or that if signs did occur that the fish had recovered by the end of the study, or that the results are not consistent for an unknown reason.

The presence of GBD signs does not necessarily provide a indicator of impending mortality. Weitkamp (1977) placed the surviving individuals from previous tests in 4 meter restricted depth cages. These fish suffered additional mortality, near 10-

13% after the experiments even when held below compensation depth. Although many of the dead fish displayed sever GBD lesions, it was not uncommon for fish with only slight or moderate indications of GBD to die. Some fish with extremely severe external signs of GBD survived the 20-day test and appeared to recover. It appears that severity of the external lesions is not a good indicator of the length of survival or of probable mortality.

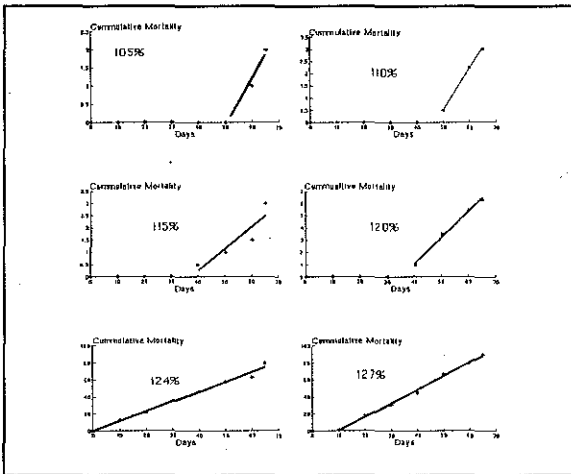


Figure 5, Juvenile Chinook cumulative mortality, From Dawley, 1976, fit to simple linear regression model

Available field and laboratory studies provide information demonstrating the effect of exposure period on the mortality of both juvenile and adult salmon. In developing algorithms for the CRISP model data from Dawley et al (1976) using 2.5 meeter tanks.

The cumulative mortality from the multiple test indicate that the mortality is greater at higher levels of TDG ($\geq 120\%$) as compared to relatively lower levels of TDG (≤ 120). The data also support observations of a latent period of no, or low mortality prior to the onset of a relatively more

rapid mortality rate. This data implies that the duration of the latent period, as estimated by the simple regression equation, may be dependent in part on the level of TDG.

The authors of CRISP1.5 used a cumulative mortality function of

$\frac{dS}{dt} = -M_n S$. This function appears to over-estimate the observed mortality during the latent period of low mortality, and underestimate the observed cumulative mortality rate at higher levels of TDG and extended exposure. The simple linear rates were fit to only that data indicating measurable mortality.

The data available from Weitkamp (1976) provides an in-situ example of the influence of time of exposure on cumulative mortality. The mortality rates were fit to a simple first order

equation $\%S = e^{kt}$, where :
 $S = 100\% - \text{Mortality}$, and $t = \text{days}$.

The studies by Weitkamp indicate that the mortality rate is dependent upon both the depth available to the fish, and the TDG level. The absolute mortality observed is dependent upon the number of days the test was conducted, as well as the depth available to the fish and the TDG level. The reported mortality is not the absolute mortality. For example, if the 10-day test (1) was conducted for the 20-day period used in subsequent studies, greater mortality would have been expected. It is therefore not appropriate to interpret the reported mortality in the studies as absolute mortality.

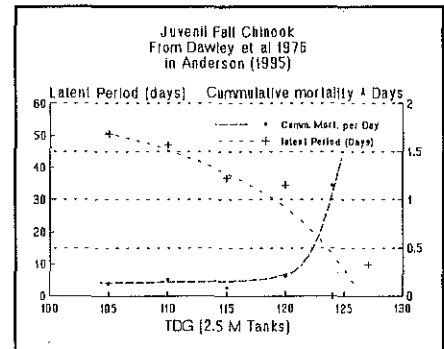


Figure 6 Calculated cumulative mortality rate (linear) in days and threshold period (days) vs TDG

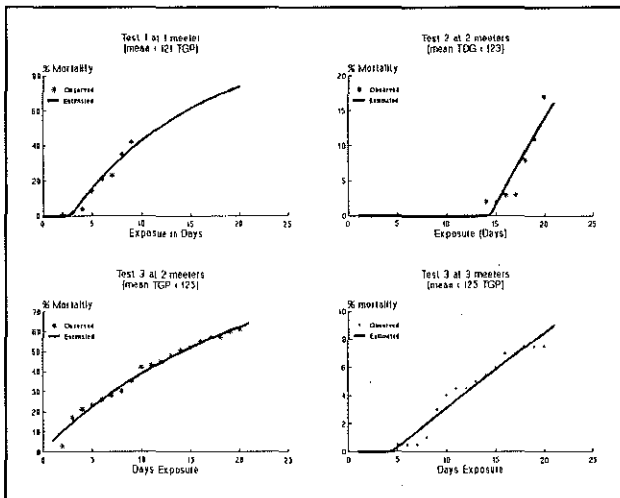
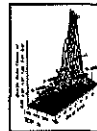


Figure 7 Cumulative Mortality from selected test conducted by Weitkamp (1976) in the Columbia River

Dawley et al (1976).



The mortality rates as dependent on maximum available depth and TGP were estimated from available studies and smoothed using multiple polynomial regression. The data presented should be interpreted only as relative rates, from and not absolute rates field that can be extrapolated into in-situ mortality. The mortality rates estimated by this method are similar to, but less assay than those reported for Chinook Salmon by smoot Anderson (1995) as calculated by from using multiple polynomial regression.

Comparison of Mortality rates		
TDG (%N)	Anderson	Estimate Figure 8
115	0.0087	
120	0.0153	<0.001
124	1.233	0.049
125.5		0.68
126		
127	1.030	

The estimated mortality rates developed from the in-situ violation cage data is, not surprisingly, consistent with Weitkamps observations that fish held in violation cages of up to 3 meters depth would begin to suffer significant mortality at TDG

levels between 120 and 125%

Part of the reason for differing mortality rates in these two studies may be attributed to the length of the studies. The in-situ studies by Weitkamp did not indicate any mortality in 2 or 3 meter violation cages during a 10-day period when average TDG was near 120%. The studies by Dawley et al (1976), similarly showed no mortality in a 2.5 meter tank for a period of 10 days. Because of the latent period prior to the onset of mortality, the cumulative mortality did not become apparent until after a 30-day period. The lack of an observed mortality rate could be an artifact of the length of the test.

At higher levels of TDG the observed mortality rates by Dawley et al. (1976) and Weitkamp ((1976) are more similar. At TDG levels of 124%, Dawley et al. (1976) observed approximately 25% mortality over a 20-day period. At similar averaged TDG levels in his third test, Weitkamp observed 7.5% mortality in 3 meter violation cages and 61% mortality in 2 meter violation cages. As indicated earlier, the mortality response appears sensitive to both the depth available and the TDG level. Also, in comparing the mortality rates generated from Weitkamps studies, and the longer duration testes of Dawley (1976) that it is reasonable to expect that had Weitkamp (1976) extended his studies beyond 20-days that greater absolute mortality would have occurred. It is therefore not appropriate when developing mortality functions to consider the observed mortality after 20-days to be an absolute mortality unless the exposure was known to be less than or equal to 20 days.

The Departments earlier assessment of the in-situ violation cage experiments has been appropriately criticized for the failure to note the lack of an

adequate control (Fiddler personal communication). The fish in the live cages may not behave as they would in the wild. Fiddler notes that some observations have suggested that the test fish may be artificially seeking the greatest depth possible. If the concern is accurate then the violation cages may underestimate the mortality rates. Similarly, mortality due to factors, such as reduced feeding, other than TDG may become more important in test of longer duration. The longer duration tests may therefore overestimate mortality due to TDG.

It is not clear why fish in the deeper (4m) volition cages in Weitkamps studies experienced lower mortality rates than those held in 2 or 3 meter cages. Similar to observations by Ebel (1971) and others the fish held in the volitions cages could have avoided much of the effects of TDG up to TDG levels approaching 125% through depth compensation that these fish were unable, or unwilling to detect and avoid supersaturation conditions. The greater depth in the 4(m) cages may have provided fish the ability to obtain adequate hydrostatic compensation (depth) to recover from effects elevated TDG incurred during periods spent at shallow depth. As discussed earlier greater depth is required to reduce bubbles once they have formed. The response to depth in the volition cages may not be linear as indicated earlier in figure 2 since fish have free access to any depth within the maximum established by the cage.

Although the fish in the 4m cages showed no mortality, significant signs (38%) of GBT were observed when TDG averaged 124.5 for a 10-day period (test 2) at the end of the study. This data suggest a threshold at near an average 125% TDG when exposed for 10-days. Weitkamp (1976) suggest that since fish typically have greater than 4 meters of available depth the deeper volition cages may better reflect the sensitivity of juvenile salmonids to what will occur in river.

Review of Mortality Functions:

The "Risk Assessment" calculated a mortality function based on in-situ cages studies. The mortality function presented is compared to the data set used, which excluded shallow (<3 feet) studies, for Chinook salmon juveniles only. It is not clear what mortality function was used in the risk assessment exercise, however, the reported model (Group 2) appears to underestimated the observed response of confined juvenile chinook to elevated levels of TDG.

The bias in the "group 2" mortality function can be illustrate by plotting the residuals (observed - predicted) by TDG. The residuals are not evenly distributed around zero. The mortality function presented as "group 2" would greatly underestimate the

effect of TDG in the range of 125% TDG.

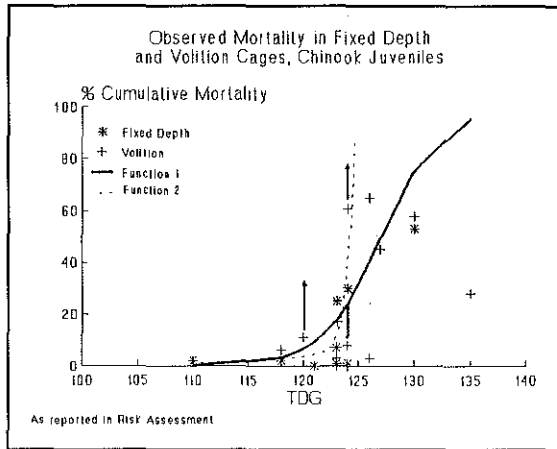


Figure 11 Mortality Functions

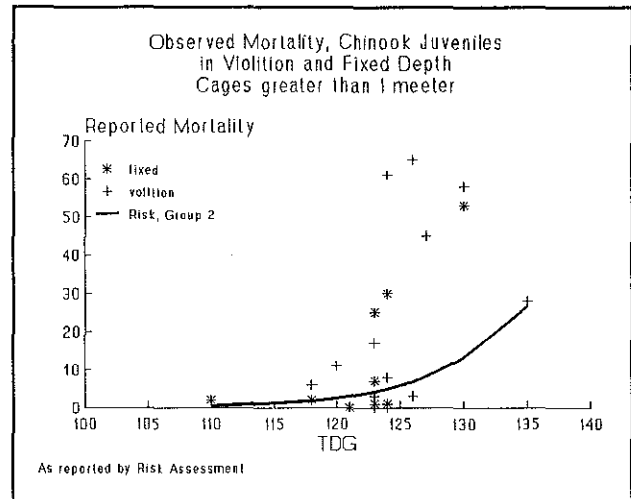


Figure 9, Mortality Function "Group 2"

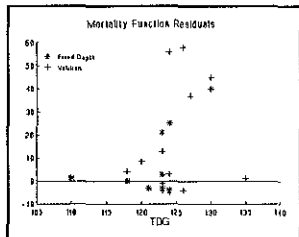


Figure 10, Bias Mort, Func. Group 2

There is no magical method that is best for empirically fitting an equation to a series of data. Certainly, when parameters can be used that are associated with cause and effect a "common sense" test can be employed. However, residual analysis provides an accepted systematic method for determining the aptness of a model (Neter and Wasserman (1976)). The observed bias in the "group 2" model would make its application for estimating mortality limited.

It is not clear that the mortality function presented as "group 2" was used to estimate chinook juvenile mortality as a function of TDG. As illustrated, alternative equations could have been used to explain the available data. Also, as previously discussed, the observed mortality should not be interpreted to be absolute mortality. Higher cumulative mortality would have been expected if the tests were run for longer periods.

These empirical data fitting exercises indicate that fish held in volition cages between 0-7 feet or 0-18 feet would suffer significant mortality at as TDG levels approached 125%. The sharp rise in mortality observe in several bio-assay studies in the range of 120-125 suggests a threshold above which relatively fast mortality rates would be encountered in bio-assays.

Review of Mortality Equivalence Calculations:

It was not possible to verify the mortality calculations used to

estimate smolt mortality used in the risk analysis. The process appears to attempt to use available data where possible, and make reasonable assumptions where data does not exist. It is not clear how reach mortality is calculated. A reservoir mortality of 15% was assumed and applied to the population estimated above Ice harbor. A similar population estimate was assumed for the Dalles Dam. It is however, not clear what reach mortality was assumed for other projects. It is also not clear whether the density dependent mortality (expressed as a percentage of the population) was applied under the base and spill scenarios. The reach mortality, due to predation and other factors, has in other assessments been assumed to be density independent (Anderson Personal Communication).

The Risk Assessment plotted the mortality function against the change in survival. The point where these lines become equivalent was interpreted as providing the level of TDG where additional benefits would not be incurred from increased spill.

Since the Risk Assessment survival numbers could not be verified a simplified approximation was used. This calculation resulted in a density dependent mortality rate per project of 4.1% due to elevated TDG that would be equivalent to the benefit of increasing FPE from 0.50 to 0.80. The density dependent mortality equivalent point for the overall system survival, assuming 8 dams was near 28%.

The estimate of relative benefit will depend on the base condition assumed for survival and FPE as well as the FPE efficiency assumed. The base conditions used in the risk assessment could not be verified with the information presented. Information from Anderson et al (1995) provided measures of the base fish passage efficiency under a no spill scenario. Turbine mortality estimates by project were provide as table 4 in the risk assessment. Application of this data does not materially change the relative survival estimates attributable to passage past the dams.

Example Calculations:

Total Passage = FPE + (1-FPE)
FPE survival/Project = 0.98%
(1-FPE) Surv/Project = 0.85

Base Condition FPE = 0.50
Test Condition FPE = 0.80

Survival (S) is:
(FPE * 0.98) + [(1-FPE) * 0.85]

Survival for n Projects is S^n

Assuming density dependent mortality the relative change in survival per reach can be determined as: S_b/S_t , the relative change in system survival is: S_b^n/S_t^n

Comparing mortality functions illustrated above from the in-situ volition cages to the system survival difference in the range of 25% it would appear that the equivalent level for TDG is in the range of $>120 \text{ TDG} < 125$. It is difficult to extrapolate the data to indicate an equivalence point of > 130 as indicated by the risk assessment Figure 6(b).

Calculated Differential Mortality					
LOC	FPE%	M_t	S_b	$S_{@80\% \text{ FPE}}$	$1 - \frac{S_b}{S_8}$
LGR	50	17.5	90	95	4.8
LGO	49	8	95	97	1.9
LMO	66	20	92	94	2.7
ICE	68	15	94	95	1.7
MCN	52	11	94	96	2.6
JDA	58	13	93	96	2.5
TDA	34	15	89	95	6.2
BON	52	16.5	91	95	4.2
Avg	54	14.5			
System Structure Surv.			53	69	
1-(Base Surv/Surv. @ 80%)				24	

It is difficult to compare the simplified numerical approach to the calculation contained in the risk assessment. It is not clear where fish are entering the system, or may be leaving the system. The simplified approach calculates the percentage survival for the population of fish passing an individual project or all projects. The approach does not calculate relative survival using reach mortality which could be significant.

Inherent Assumptions:

Several assumptions are inherent in efforts to compare mortality functions

derived from the live cage bio-assays to the calculated benefits of spill. These assumption include:

- 1) the reported cumulative mortality in the live cages is an absolute mortality for the period of exposure,
- 2) the turbine mortality is accurate,
- 3) the reach mortality is zero, or that the results are not dependent upon reach mortality,
- 4) the live cage data is representative of the actual mortality function, and
- 5) the level of TDG is independent of FPE

As discussed previously, assumption 1 is not well founded. The reported mortality is not absolute. Greater mortality would be expected under longer exposure periods. Some of the exposure

periods resulting in high mortality (45%) occurred at under short duration (7 days), at relative deep volition cages (to 13-18 feet) at TDG levels of 127%. Weitkamp (1976) believed the 4 meter volition cages were better representations of field conditions than the shallower (< 3m) volition cages. The duration of the tests should be compared to the exposure period of the fish. Exposure periods may be difficult to compare with the proposed diurnal spill plan with 12 hour, rather than continuous spill.

Assumption 2, appears generally accepted. Although the risk assessment provides more specific turbine mortality estimates, the 85% survival is a frequently cited and used value. If debate on the mortality associated with turbines exists, or other data on turbine mortality exists, it should be described. Because only one value for each project was presented this review assumed that the mortality associated with dams was commonly accepted.

To test assumption 3, the mortality per project was calculated as described above. The mortality (m) for dam and reach (i..ii) was determined as: $M_{i..ii} = [(N_0) - (1 - S_i) * (S_{TDG})] - [N_{DIM}]$. Which simply means that the TDG mortality is density dependent, and is dependent upon the number of fish surviving from upstream. The constant reach mortality is density independent, and is a simple numerical mortality that does not change as instream densities of fish change. The reach mortality was assumed to be density independent based upon conversations with Anderson (1995). The equation was solved by assuming alternative levels of density independent reach mortality and solving for TDG mortality that would result in an equivalent overall survival when compared to the based condition. TDG mortality was assumed to be zero in the base condition. This exercise suggest that assumption 3 is false, but the error incurred is probably less than the error incurred with assumptions 1 and 4.

It is unlikely that any critical evaluation would conclude that assumption 4 is valid. Any extrapolation from these field studies would be tenuous at best. However, similar extrapolations of controlled studies to field mortality, such as in CRiSP1.5 mortality rates have been made. The field data provides a limited set of data describing the various physical and chemical conditions that may influence the cumulative mortality due to various exposure periods and levels of TDG. Even with all the problems associated with drawing inference on instream mortality from controlled studies the instream bio-assays provide the advantage of having occurred in river.

As illustrated above, there does appear to be a significant

correlation between the observed cumulative mortality for Chinook Juveniles held at moderate (6 feet) or greater depth (18 feet) depth and the level of TDG. The predictive ability of the regression, whether a logistic (1) or quadratic (2) function does not appear to be reasonably improved by including a depth or time function. However, as discussed above, it is reasonable to expect that differences in either depth or time could influence the expected cumulative mortality. However, information is lacking to improve the predictive capabilities of this empirical approach based on depth. It does appear reasonable, as illustrated from previous reviews above, to believe that a better understanding of depth distribution and exposure time would increase the ability to apply and interpret the effects of TDG.

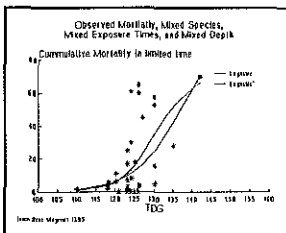


Figure 12
Logistic
Mortality
Functions

The risk assessment concluded both that depth was not significant, however states that it is important to note that the highest mortalities observed between 120-125% were for studies with fish confined to cages between 0 and 7 feet.

Figure 13 illustrates the residuals from figure 12 which attempted to duplicate the rational for developing a mortality function contained in the risk assessment mortality function. The residuals do not indicate a linear bias with depth. The mortality does not appear to be higher in the shallower 3-5 deep cages than expected. As discussed earlier, the precession of this method could be improved by focusing on a single species.

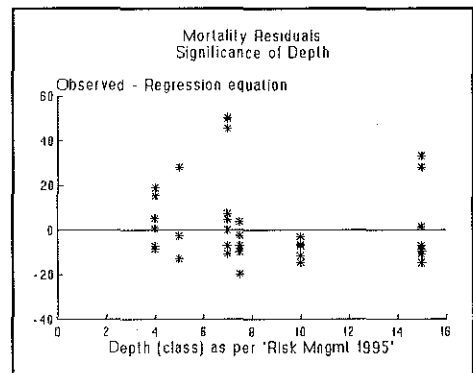


Figure 13 Depth Bias
Logistic Mortality
Function

Exposure time may also influence the estimated cumulative mortality for a given level of TDG. The volition cages may provide some integration of the diurnal cycles of fish and provide an indication of the effect of intermittent exposure to TDG above equilibrium thresholds. Similarly, field work by Weitkamp (1976) indicates the effect of intermittent exposure. Controlled changes in depth were used to simulate diel patterns of fish and to intermittent exposure to differing conditions of TGP and depth. Cages were alternated between 0-1 meter and 3-4 meters for two 20-day test, as illustrated. However, the TGP was near or above 125% TGP for only 11 days of the test. In a 16 hour exposure (not illustrated) at TGP of 125%, 50% mortality was reached in 5 days. In a 10-day study no (0%) mortality was

observed with saturation between **118-123% TGP**.

The data presented by Weitkamp indicate that some amelioration can occur through intermittent exposure by depth compensation as compared to continuous exposure. Mortality rates increase as the time period of exposure increases, and as TGP increases. At 120 TGP, and intermittent exposure of 12 hours, for less than 20 days, these studies suggest limited risk of acute exposure. However, during a 12 hour time period over 11 days significant mortality could occur at TGP between 120 and 125%. Above 125% TGP significant mortality could be expected with even short term exposure of less than 8 hours, for over 11 days. These results appear qualitatively consistent with the dose response models provided by Jensen et al. (1986).

Avoidance, especially of it occurs through hydrostatic compensation is important to a determination of the potential effect of hydrostatic compensation. The risk assessment indicates that available distribution data demonstrates avoidance of TDG. This controversial finding needs to be described in greater detail.

The data presented by Dawley et al. (1975) and Weitkamp and Katz (1980) suggest that fish distribution would result in some of the juvenile salmon at depth less than 2 meeters. Dawley et al. (1975) report that of the fish caught in the upper 3.7 meeters, that 80% of the Chinook and Steelhead trout (combined) were in the upper 1.8 meters of the river, and that 46% of the Chinook and 29% of the Steelhead were caught between the surface and 1.8 meters.

Weitkamp and Katz (1980) discuss several studies to provide information concerning the depth distribution of migrating juvenile salmonids in the Columbia River. Smith (1974) found 56% of juvenile chinook salmon and 36% of juvenile steelhead were taken in the upper 4 meeters of the water collum, 46% of the Chinook and 28% of the steelhead were collected above 2 meeters, and 19% of the chinook and 8% of the steelhead were above 1 meter. Results appear similar to Dawley (1975) indicating a

Vertical distribution of juvenile salmon and steelhead caught in the forebay of Lower Monumental Dam (1973), Dawley et al (1957)

Depth (m)	Chinook		Steelhead	
	N	%	N	%
0-3.7	143	58	441	36
3.7-7.3	63	26	291	24
7.3-11	19	8	189	15
11-15	4	2	106	8
15-18	3	1	61	5
18-22	6	2	62	6
22-26	2	1	32	2
26-29	5	2	48	4

significant portion of the population residing within 2 meters of the surface. However, Weitkamp (1974) in a different study found less than 5% of the chinook salmon were collected above 2 meters, 20% of the coho, and 10% of the steelhead were collected above 2 meters. Blaham (1974) and Blaham et al (1976) approximate that 72% of the fish encountered with sonar transducers were between 0.9 and 2.1 meters deep. The review by Weitkamp and Katz (1980) provides results similar to those reported by Dawley (1975).

Several factors other than TDG may influence the depth distribution of fish. Any association of depth distribution with TDG would need to ascertain whether the distribution is related to other factors. Anderson (1995) cites the work of Zabel (1994) that shows that fish of a given species tend to seek specific depths that are correlated to level of illumination. Other factors may influence the diurnal variation, or other temporal patterns of fish distribution. The various volition cage studies may not suggest avoidance of TDG, but they do suggest that the fish in the test cages spend adequate time at depths below compensation depths to avoid the effects of GBD up to between 120-125% TDG for the period of the tests (illustrations above). As previously noted, it is not possible to determine the effect on behavior of placing fish for extended periods in holding pens.

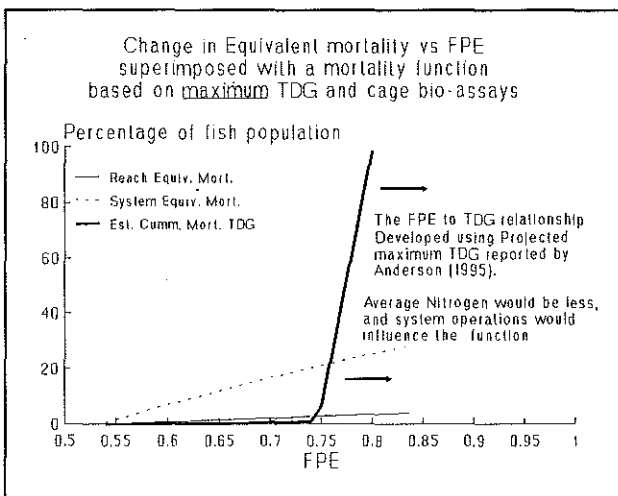


Figure 14 Mortality vs FPE from FPE and Maximum TDG in Anderson 1995 vs Increased reach and total survival compared to a base FPE of 53%.

debits are a function of risk of increased direct and indirect mortality due to elevated TDG.

The assumption (5) that the level of FPE is independent of TDG is incorrect. At some of the projects it may not be possible to attain 80% FPE at TDG levels of less than 120-125%. The benefits to instream passage of an 80% FPE are not achievable at all projects and therefore overestimate the benefits of spill. The risk assessment assumes that the TDG equivalence level can be achieved at spills generating the improved survival of an 80% FPE.

The relative benefits accrued by spill are both a function of the initial FPE and the relative increase in FPE. The

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Since TDG is related to spill, the mortality function as related to TDG illustrated previously can be presented as a function of FPE. The point where the estimated mortality coincides the reach equivalent mortality provides an indication of the maximum beneficial FPE. From this figure it appears that if the mortality function is compared to the reach survival, which assumes fish die within the travel time of a reach, a more cautious interpretation of the relative risks is warranted as compared to the total system mortality. Since the above figure illustrates the maximum TDG levels, an analysis by individual projects would shift the mortality curves to higher FPE. The extent of the shift would be project dependent, and in some cases dependent on upstream TDG condition.

The relationship between TDG and FPE was determined from information provided by Anderson (1995) as presented in the CRISP1.5 model. The CRISP1.5 model attempts to integrate both the effect of spill and the mortality due to increased TDG. The increase in TDG from spill to achieve various levels of FPE is presented for individual projects. The mortality function was taken from the live cage bio-assays as presented earlier and incorporates the same concerns, cautions, and assumptions for its use. The TDG level used to convert FPE to mortality was the maximum threshold achieved as measured in the tailrace of the following dam. The average TDG level would be much less, and the mortality threshold shifted toward higher TDG levels. The TDG levels in other reaches would also be less.

The information presented by Anderson suggest that the assumption that the benefits of 80% FPE will be achieved, as used in the risk assessment is not certain for all projects. The data from Anderson (1995) suggest that the 80% FPE can be achieved at TDG ranges of 115-120% for several projects, and that project management could influence the FPE-TDG relationships at downstream projects. It would therefore be reasonable to assess the impact of projects independently. The 80% FPE may not be appropriate for all projects if the level of TDG exceeds a reasonable balance of the risks to direct or indirect mortality due to TDG.

Data Rejected by DEQ Evaluation:

In the assessment of mortality functions the Department did not include preliminary data from live cage bio-assays conducted during the spring spill program. The data presented in the Risk Assessment could not be verified.

During the Spring spill program live caged bio-assays were conducted using hatchery spring chinook juveniles in the Columbia

Results of 1994 Salmonid Live Cage Bio-assays as reported by the FPC							
	Bonneville				Below Ice Harbor		
Date	TDG	% Signs	%mort	t/c	TDG	% Signs	%Mort
9-13	117	2.6	0	t	122	30.3	7.1
		0	0	c		20	10
16-20	115	0	0	t	118	3.5	7.1
		0	0	c		0	0
23-27	116	2.5	0	t	118	37.5	12.5
		5.6	0	c		0	0
30-3	109	0	0	t	118	5.5	1.8
		12	0	c		0	0
6-10	110	0	0	t	118	0	.1
		0	0	c		0	0

River below Ice Harbor and Bonneville Dams. The test were run for a short period of 4-days. The fish were taken in river, and it was assumed that the exposure period would therefore have been longer than indicated by the holding period. However, the 4-day period would not be shorter than the apparent latent mortality period except at relatively high TDG concentrations (> 120). The short 4-day period would also not provide an indication of the rate of mortality. If mortality due to GBD is present it would indicate a significant response. Because of the

short holding time the cumulative mortality would not be presented in the data. Data from these studies would be difficult to compare to longer term studies except if the obvious conclusion of high mortality rates.

Two parallel test were conducted, one using a volition cage, and a control at a fixed depth. The fixed depth control appears to assume that since the fish are held at greater than compensation depth that any mortality that occurs is not related to GBD. This assumption may not be appropriate. Weitkamp (1977) demonstrated additional mortality at fixed depth from fish suffering from GBD when held below the compensation depth. The control fish that died may be exhibiting a response due to GBD similar to observed by Weitkamp (1977). Similarly, since we do not know the exposure periods, or how extensive any damage from GBD may have occurred previously to the test fish, the controls may experience mortality related to GBD.

No mortality was reported in the preliminary data for below Bonneville. Mortality was reported for below Ice Harbor ranged in the test cages from 2% to 12%, and may have been associated with the generally higher levels of TDG. Significant mortality occurred in one of the control studies.

The preliminary data is substantially different than the data reported in the risk assessment, which is also preliminary. The Risk Assessment reports only one indication of mortality at 2%

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below Ice harbor. The Department has, on several occasions noted concerns with apparent changes in the reported responses, and requested the data from the National Marine Fisheries Service. Most recently, the Department again requested copies of this data from the National Marine Fisheries Service as part of the public review process for which the Spill and 1995 Risk Management document was submitted. Because of the changes in reported data, persistent refusal to provide data for review, and inability to verify original it is unreasonable to use this data in the review. Even with verification, it would appear unreasonable to compare the 4-day data indicating a low, or no response to a longer period showing an elevated response because of the importance of exposure period on cumulative mortality.

Date: February 3, 1995

To: File

From: Baumgartner, Robert P.

Subject: Review of Adult Analysis in Spill and Risk Management (1995)

The fisheries agencies calculated a potential mortality quotient using data from Bouck et al, and Nebecker et al (1976). The mortality rate was then modified using the simple, and reasonable, assumption of 10% per meeter TDG depth compensation. The depth compensation mortality rate was compared to cautiously estimate exposure periods and depth distribution of adult salmon to determine total mortality. The Depth distribution was taken from Gray and Haynes 1977 who, apparently, determined adult depth distribution as a function of TDG.

The attached figure illustrates the data for adult mortality in 1 meeter tanks as presented in the risk analysis. The data was fit to single equation describing mortality as a function of exposure time and TDG level. The asymptote for acute response at various levels of TDG from 110-130% can be compared to the exposure times reported in table 13 of the Risk assessment.

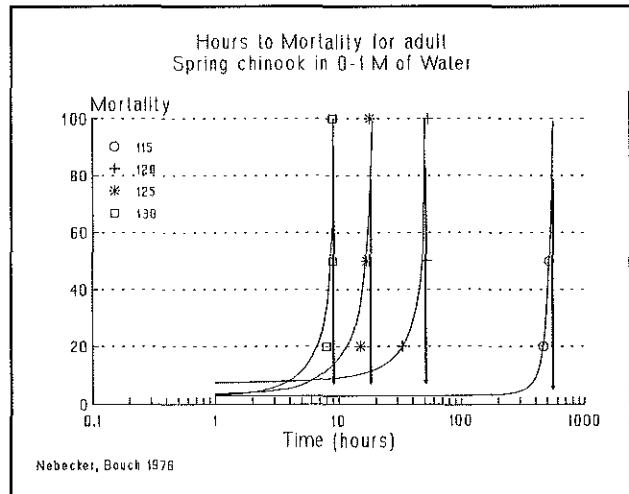


Figure 1 Mortality function used in review of Risk plan 1995

Sp	Hours
SpCh	1704
s Ch	960
St	576
Soc	936

The reported exposure times are relatively great compared to the exposure thresholds for significant mortality presented in the data by Bouck and Nebecker.

It may be assumed that it is unlikely that fish would remain in the shallow water of 0-1 meeter for the continuous period of their migration. By sounding to greater depth beyond compensation depth fish avoid the effect of the elevated GBD. The spill program may also not focus on continuous spill. The exposure to elevated TDG may be more on the order of 12 hours. The actual exposure would depend on duration of spill,

dispersion of the gas in the water column, gas equilibrium rates, and the difference between fish travel and advective flow. Acute exposure periods for fish in 0-1 meters of water of less than 24 hours would not be expected until TDG levels approached 125%.

The risk assessment depth compensation modifications are in error. This error can be observed by going through the exercise used in the assessment. The assessment claims to use the mortality observed by Nebecker et al. (1976) and Bouck et al (1976), as adjusted for depth compensation to estimate population mortality. In the 0-1 meter classification with TDG at 120% the spill and 1995 Risk Management calculates no mortality over 576-1704 hours. The lack of mortality is due to the calculated hydrostatic compensation of 1 meters, or $120 - (1 \times 10) = 110\%$ TDG. However, Nebecker et al. (1976) and Bouck et al (1976) in the same depth range of 0-1 meter and also at 120% TDG observed a much greater value of 100% mortality for Chinook, Sockeye, and Coho salmon in less than 100 hours. Obviously, the data in Bouck et al (1976) and Nebecker et al. (1976) is not reflected in a zero mortality estimate for longer exposure period at the same level of TDG and depth. Apparently minor assumptions in these analysis could lead to substantially differing inference (100% compared to 0%) on mortality. To be comparable at this depth, the depth compensation should have used the zero (0) depth. It is also reasonable to assume that a similar adjustment needs to be made for the depth compensation throughout this assessment.

The attached table illustrates the modified depth compensation calculations that may be more appropriate to compare to mortality as presented by Bach et al (1976) and Nebecker et al (1976) than those used in table 15 of the Risk Management Plan.

Hydrostatic Compensation				
	115	120	125	130
0-1	115	<u>120</u>	<u>125</u>	<u>130</u>
1-2	105	110	115	<u>120</u>
2-3	<100	100	105	110

The next step compared the potential risk to mortality as a function of the exposure period and the adult distribution from Gray and Haynes (1977). We could assume mortality for those fish in of the depth adjusted TDG level whose exposure threshold is exceeded by the exposure period. Since the exposure periods are greater than the exposure thresholds presented above it would appear that fish at a depth adjusted 115% TDG would be counted as mortalities. However, as discussed above, it would appear that adults may not be continuously exposed for the long periods needed to result in mortality.

The range of >115% depth compensated TDG could be assumed to be an indication of risk. When the perception of risk at 115% is expanded to include the exposure interval of several hundred hours it would appear unlikely that substantial mortality would occur. Under the proposed spill programs of 12-hour averaged spill continuous exposure is unlikely.

Depth Distribution as presented in the Risk Assessment					
	110	115	120	125	130
0-1	9.6	7.4	5.3	3.1	1.7
1-2	18.2	15.0	11.8	8.6	6.0
2-3	17.7	16.7	15.7	14.7	14.4

The TDG range of 120 as compensated for depth provides greater risk of mortality. The exposure period for threshold mortality is on the order of several days (figure 1). However, from extrapolation low percentages (<5%) may occur on the order of 20 hours. Although 20 hours is greater than the proposed 12-hour spill scenarios it is similar to the proposed periods. There does not appear to be substantive literature available to describe the response of adult salmon to repeated events of elevated TDG for periods less than the threshold exposures.

In the range of 125% or greater depth adjusted TDG mortality threshold appear to be reached within 12 hours. The proposed spill program of 12 hour spill could expose a portion of the population of adult salmon to lethal level of TDG. By accepting the distribution of salmon as presented in the Risk Management 1995 tables, this proportion of adults at risk to lethal levels of TDG is on the order of 2-4%.

In the range of 130% or greater depth adjusted TDG the threshold exposure period is on the order of less than 10 hours. The 12-hour spill cycle would be expected to expose a portion of the adult salmon

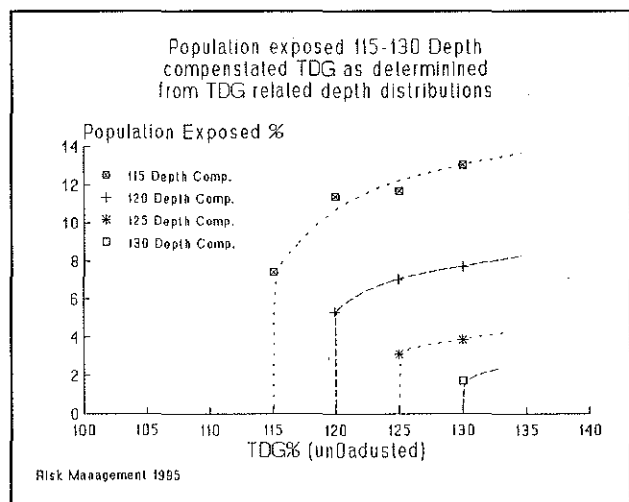


Figure 2 Proportion of population exposed to specified levels of Depth Adjusted TDG vs Surface TDG.

would be expected to expose a portion of the adult salmon

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populations to potentially lethal levels of TDG. From the population distributions presented in the Risk Management 1995 the increased percentage of adult salmon exposed to lethal exposure of TDG is on the order of <2%.

Figure two is not intended to illustrate an estimate of adult mortality due to TDG. Figure two, when compared to the mortality estimates for adults in the Spill and 1995 Risk Management provides an illustration of the sensitivity of mortality estimates to reasonable assumptions. From Figure two (2) at levels of TDG at 130%, less than 2% of the fish would be exposed to unadjusted levels of TDG of 130%. Acute risk in less than the 12 our spill cycle could be expected. Approximately 4% of adults would be exposed to depth compensated TDG of 125% or greater. From figure one (1) a proportion in the range of 10-20 of the fish exposed to a depth adjusted 125% TDG may die, however the acute asymptote is on the order of 20 hours. Nearly 8% of the adults could be exposed to adjusted TDG levels of 120 or greater%. Acute mortality thresholds for adults may not be exceeded for a 12-hour spill cycle. However, the effects of repeated exposure are not known, and thresholds for low mortality rates are not as well described. Approximately 14% of the population would be exposed to depth adjusted TDG on the order of 115% or greater. The acute threshold from figure one (1) is on the order of several hundred hours at 115% TDG.

The cited reference for depth distribution was not made available for this review. It is not clear how well accepted the document is by the scientific community and fisheries management agencies for describing adult distribution. The data presented by the Risk Managements implies changes occur in the depth distribution as a function of TDG levels. This shift toward a deeper distribution as TDG increases, whether active or passive avoidance, would act to provide protection from elevated TDG through hydrostatic compensation.

It is not clear how to convert the distributions and depth compensated TDG into population mortality. As illustrated by Nebecker et al (1976) and Bouck et al (1976) as TDG approaches 130%, adult salmon may be expected to die within a few hours. When compared to a depth distribution only a portion of the population would be exposed to elevated TDG. It is not certain that all fish exposed to a 130% depth compensated TDG level for over 10 hours will die. It is also not certain how frequently fish will re-distribute themselves. It is also not clear that if the fish in the upper end of the distribution die, that others will not simply take their place in the distribution. For example, 2% of the adults could die within a 10 hour period due to TDG approaching 130% TDG. During the remaining days of the

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migration are we to assume that no more adults utilize the upper meeter of water?. Conversely, are we to assume that during the next period of elevated TDG that last for 10 hours near 130% that another 2% of the adults are exposed to lethal levels of TDG for a 10 hour period?

Anticipating mortality in the range of 115% to 125% is even less certain than at 130%. At 125% the acute threshold would not be achieved during the 12 hour spill cycle since the acute threshold is on the order of one day exposure in shallow water. It is difficult to ascertain how frequently adult fish move up and down in the water column and would be exposed to potentially acute levels of TDG. The effect of repeated exposure is not known.

The risk to mortality of adults any also be partially offset by a reduced mortality from "falling back" over the dams. Previous "biological opinions" indicated that some data existed to demonstrate reduced mortality to adults "falling Back" over spillways as compared to "falling back" through turbines. This potential benefit was not compared to the risk to mortality due to TDG in the risk assessment.

Date: February 2, 1995

To: File

From: Baumgartner, Robert P.

Subject: Review of Flow relationships in Spill and Risk Management 1995

The Risk Management Plan states that "the historical record demonstrates that better adult return of chinook occurred during years when juveniles migrated under high flow and high spill conditions". The plan further summarizes that "while not conclusive, indications are that higher survivals are observed from populations migrating under high spill/flow conditions."

The relationship between discharge (flow) and survival needs to be further developed to support a conclusion of higher survival with flow. Information from the available literature should be presented. There appears to be substantive literature available demonstrating positive correlations between flow (discharge) and smolt survival (Sims and Ossiander 1981) or water velocity and survival (Raymond 1979). Other literature is cited in the Risk Assessment and include Hilborn et al (1993) and Petrosky (1991) could be further developed. It would also be advantageous to provide corollary and supporting information using any further data describing adult or juvenile survival indices available from the Fish Passage Center and the fisheries agencies.

There is reason to believe that increased discharge, and therefore decreased travel times have a positive benefit for salmonid survival. The mortality rate of juvenile salmonids as related to TDG levels is dependent on several factors. The CRISP1.5 model describes predation mortality as a rate dependent term (predator activity) that is a function of predator density, and stream temperature, and river section type. From field bioassays (Weitkamp 1976) and laboratory studies (Dawley 1976) the mortality at a given exposure level may be preceded by a latent period and followed by a time dependent mortality rate. Similarly, other factors, such as predation, appear rate dependent. However, to oversimplify a complex system, since both TDG and predation mortality terms are time dependent, decreasing the exposure time would be expected to decrease the cumulative mortality. The relative risk to TDG compared to other options would therefore be expected to be related to the instream conditions. Benefits of spill would be relatively greater at higher flow conditions, or other conditions that similarly acted to reduce exposure time.

Discharge (flow) is not equivalent to spill. Spill is one option

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for passing the discharge volumes (flow) available past a dam. Spill can occur to aid fish passage, or for other reasons. From the data presented in the Risk Assessment it appears that spill is closely correlated to discharge, and TDG. An observation that increased survival related to increased discharge, with an increased spill and associated increased TDG, would not mean that increased TDG does not result in increased risk to migrating salmon. Such an empirical observation could not be used to imply that elevated TDG does not pose increased risk to migrating salmon. The question of whether differential survival would have occurred under different levels of TDG, at an equivalent level of discharge (flow) still remains. Data should be evaluate to determine whether the related affects of decreased travel time (increased discharge) and the correlated increased TDG can be separated. Similarly, when adult returns are compared to conditions encountered as juvenile migrants, other factors such as ocean conditions in the intervening years, should be incorporated into the analysis.

Discussion with Bob Heineth (CRITFC) indicate that a body of data (Snelling 1994, and others) is available that indicates (demonstrates) that increased spill, as opposed to increased discharge, acts to decrease smolt travel time. Apparently, with increased spill the juveniles are better able to find preferred passage, spend less time in the forbays holding or searching for passage, and spend less time in the tailraces. The effect, therefore, would be to reduce the exposure period to mortality from TDG and predation. This information should be further developed.

The information presented in the risk assessment does not support the conclusion that high flow and spill is related to improved survival. Similarly, the data presented does not appear to support a conclusion of significantly increased mortality at high spill levels.

Mark-recapture studies presented in tables 1 and 2 are used to support the findings that better survival occurs during high spill, high flow years.

The recaptures were "expanded" for spill. It is not clear what is meant by "expanded", and the "expanding" calculations are not presented. Expansion presumably normalizes the data for differential spill such that the relative recaptures are comparable. Such a normalization process could be important. However, this procedure could not be verified.

The recapture studies did not appear to support a population estimate, and therefore may represent relative, but not absolute

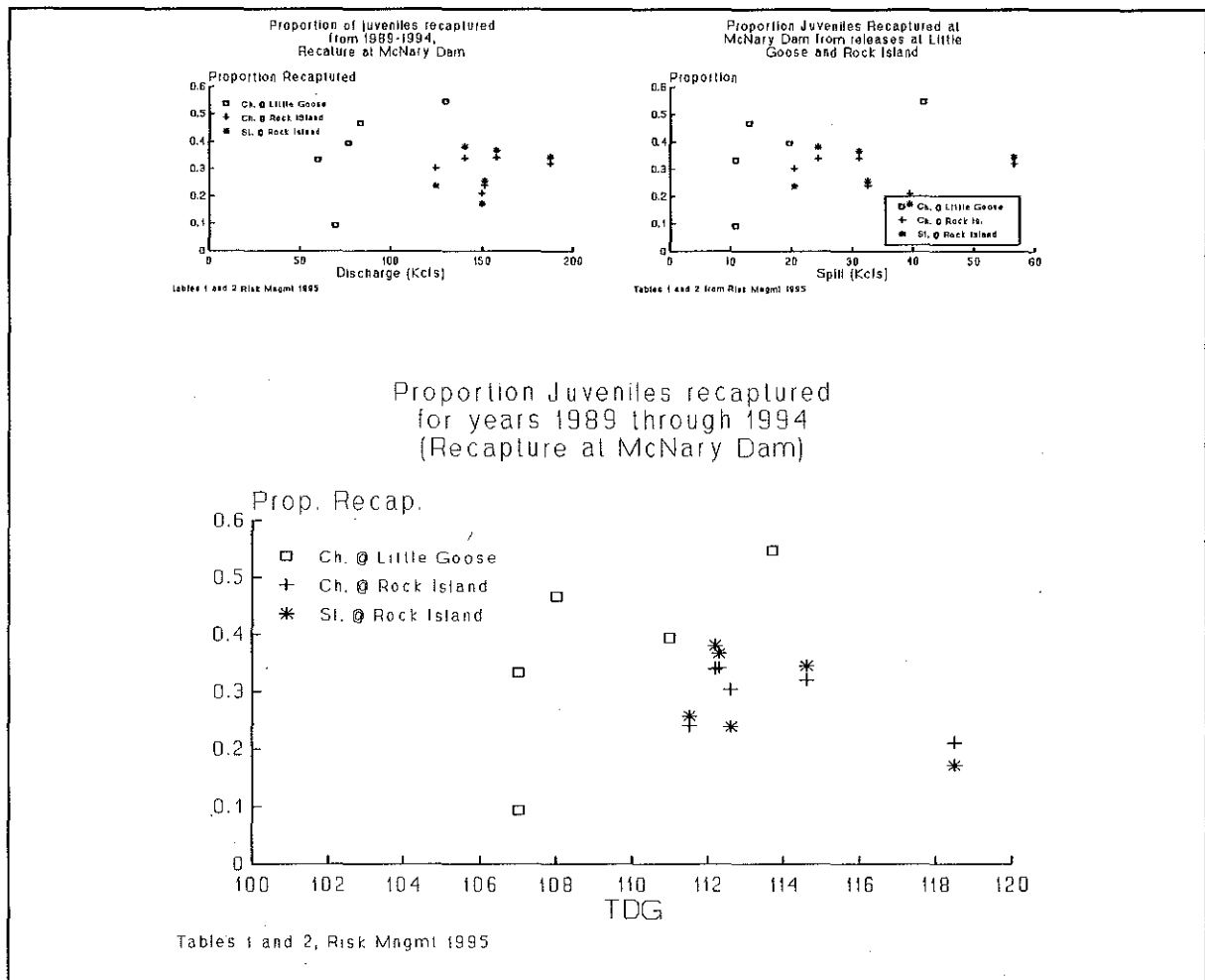


Figure 1 Tables 1 and 2 Expanded juvenile recaptures 1989 - 1994

survival. The 30% recapture may not imply 70% mortality. However, 30% recapture one year may indicate approximately 25% less survival than a previous year with 40% recapture

The report concludes the higher recovery proportion occurred in 1993, under conditions of highest flow and spill levels, and the lowest recovery proportion occurred for Snake River yearling chinook in 1990, a year with lower flow and average TDG.

The statements presented are selected attributes of the data set and appear to lead to selected conclusions. The report could as easily concluded that the lowest recoveries for both steelhead and chinook from the Rock Island SMP releases are associated with high TDG. The results from Little Goose and Rock Island are illustrated on the same figure (1), but should be viewed

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independently.

The report correctly states that overall, this data does not imply massive reductions in recovery proportions during years of higher levels of spill and TDG. The range of TDG appears to have been less than an average of 120, but the maximize was not reported. The ability of the mark and recapture study to indicate or measure population mortality should be discussed. Similarly, the conclusions could also state the balanced finding that the data do not consistently indicate any substantial benefit, as measured by recovery, to higher levels of spill or discharge.

The adult scalar developed a relative survival index, which expresses density-independent recruitment. The method development is described in several steps, and is dependent upon assumptions and empirical Ricker (stock Recruitment) models. More detail on the development of this index would be useful. It appears that the fisheries agencies made an extensive effort to develop a useful index. However, the conclusion that there is no apparent relationship between discharge, TDP, or spill and the adult scalar is well founded. Further development of the adult index may not be needed to support the associated inference that the adult data do not indicate massive mortality. Additional data would need to be presented to describe greater survival associated with high flow.

Adult data described as conversion rates (ratio) are used to support the contention of improved survival at high flow/spill conditions. The fisheries agencies speculate that the conversion ratio would be negatively correlated with factors reducing survival.

The conversion ratios are contained in table 11, and so is an error. For the year 1984 the ratio

$$\frac{6500}{8100} = .880 \text{ should be } \frac{6500}{8100} = 0.802$$

. Without access to the original data it is not possible to determine whether the numerator, denominator, or result is in error.

The report found no significant relationship between discharge, spill, or TDG and conversion. Undaunted by this finding the report states that during 1982-1984 when flows, spills and gas supersaturation were highest, two of the three years had above average conversion rates. It is significant to note that in

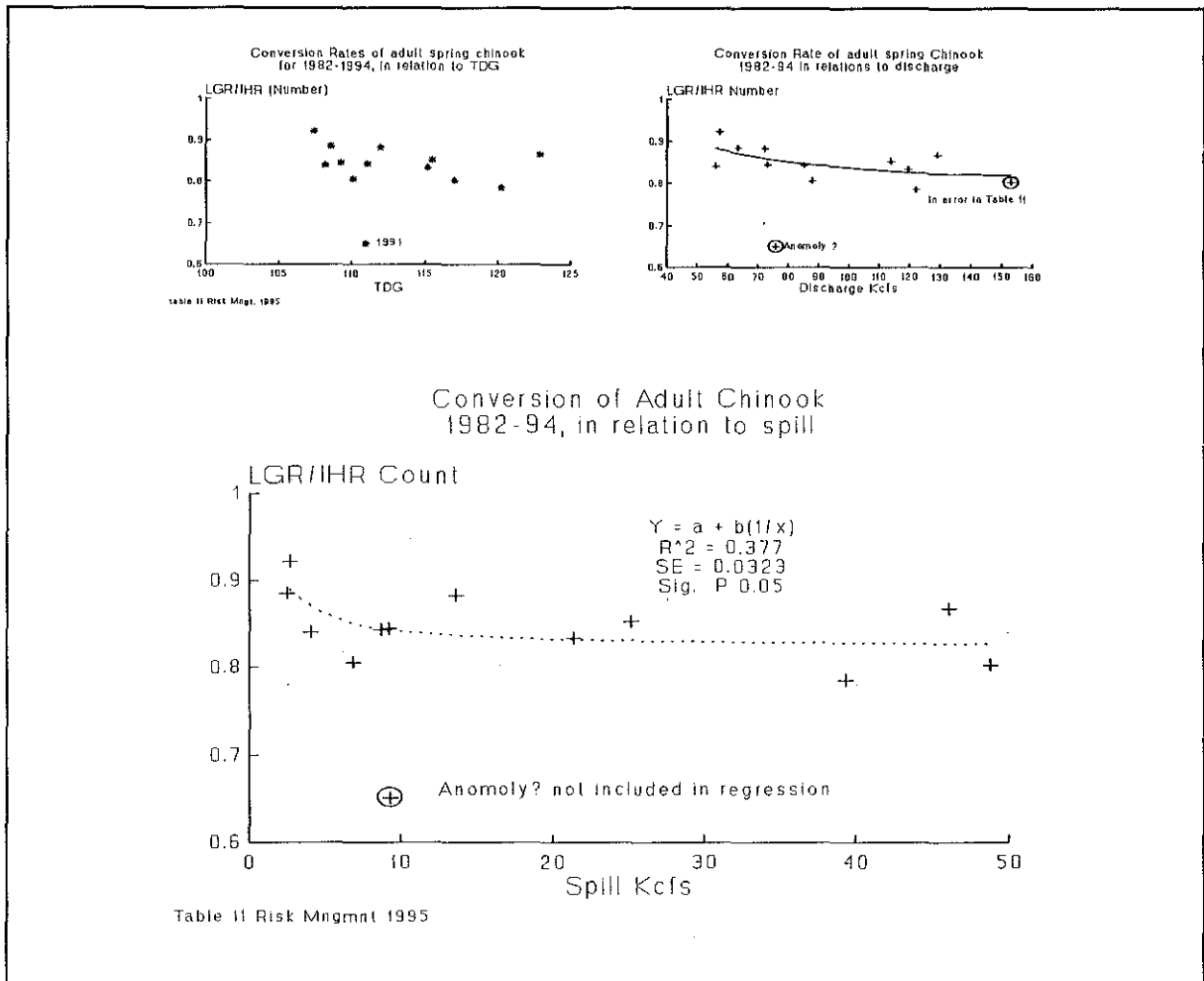


Figure 2 Adult Scalar from Table 11 as modified for 1984 division error

1982-84 when dissolved gas levels in May averaged 120.0% the conversion rate of spring chinook was 84.4%.

The significant observation that " in 1982-84... when dissolved gas levels in May averaged 120.0% the conversion rates of Spring Chinook was 84.4%" does not present a test of significance, or a significant finding. However, there appear to be a semantics question. The fisheries agencies do not appear to intend to imply a test of significance, rather a casual observation that as 120% TDG is approached a significant response is not apparent in the data set. The statements are perhaps an observation of the lack of a significant response. The lack of a significant observation providing the inference that field observations, measured as adult scalars, does not indicate an increase in

mortality as TDG approaches 120%.

However, the data should be corrected, and if appropriate, modifications made to the concluding statements i.e. when flows, spills and gas saturation were highest, two of the three years had not only lower than average but the lowest conversions except for the 1991 season.

The 1991 season generated the lowest conversion ratio. If there are any known or theorized reasons for the lower ratio then they should be explained, or hypothesized.

A comparison is frequently made during discussions on spill debate between the highest return years as associated with high flow/spill conditions. This statistic may be misleading. The data presented in Petrosky and Schaller (1992) for the period 1975 to 1986 can be used to illustrate the relationship between relative survival for an averaged value of four (4) Snake River populations and average lower Snake River discharge for the period April 15 to June 15. The obvious benefits of spill on survival are not apparent when the relative survival is plotted as dependent upon discharge.

The information presented should be expanded to include more recent information and additional measurement locations. The data could then be compared to the information developed through an expanded literature evaluation to support the conclusion that spill results in the anticipated improvements to juvenile fish survival.

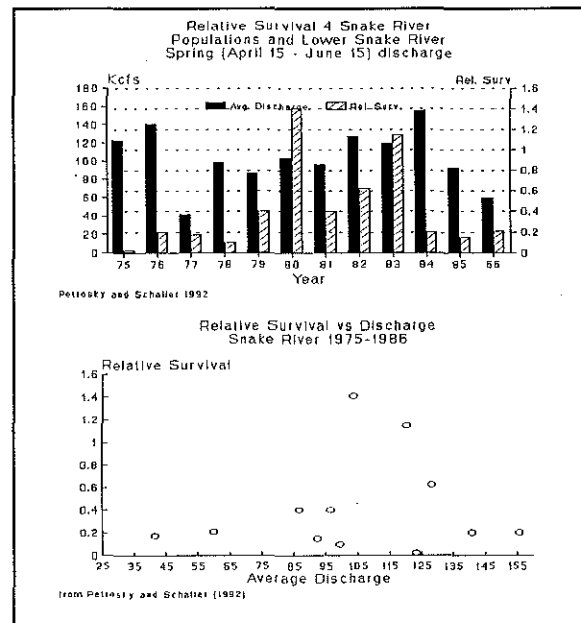


Figure 3 Relative Survival for Snake River Juveniles vs discharge.

Appendix C

National Marine Fisheries Service
Total Dissolved Gas Petition
Persons Testifying on the Proposed Variance

<u>Who Testified</u>	<u>Oral</u>	<u>Written</u>
Donna Darm Manager, Environmental Policy National Marine Fisheries Service	Yes	Yes
Dennis VavRosky Co-President Northwest Steelheaders	Yes	Yes
Barry Beyeller Public Works Director City of Boardman	Yes	Yes
Greg McMillan Anglers' Club of Portland	Yes	Yes
Tom Wolf Chair Oregon State Council Trout Unlimited	Yes	No
Liz Hamilton Northwest Sports Fishing Industry Association	Yes	Yes
Liz Hamilton Pacific Fisheries Mgt Council	Yes	Yes
Jack Gakstatter Chief, Surface Water Branch EPA Region X	Yes	Yes
Mitch Sanchotena Executive Coordinator Idaho Steelhead and Salmon Unlimited	Yes	Yes
Marcia Anderson Save Our Wild Salmon Coalition	Yes	Yes

Who Testified	Oral	Written
Diane Valantine Oregon Natural Resources Council	Yes	Yes
Thane Tienson Salmon for All	Yes	No
Larry Fidler, Ph.D. Aspen Applied Sciences Inc.	Yes	Yes* (also Tab 9, 10, 11)
Don Chapman, Ph.D. Chapman Consultants	Yes	Yes* (Tab 7, 12)
Wes Ebel, Ph.D.	Yes	Yes* (Tab 8)
Jim Anderson, Ph.D. School of Fisheries and Center for Quantitative Science University of Washington	Yes	Yes* (also Tab 12, 22)
Charles Ray Idaho Rivers United	Yes	No
Randy Chatfield Tillamook Guides Association	Yes	No
Glen Spain Northwest Regional Director Northwest Coast Fisherman's Association	Yes	No
Kelly Murphy Northwest Environmental Defense Center	Yes	Yes
Raphael Bill Confederated Tribes of the Umatilla Indian Reservation	Yes	Yes
Tom Cooney Columbia River Coordinating Group Washington Dept of Fish and Wildlife	Yes	Yes
Dan Diggs Columbia Basin Eco-Region US Fish and Wildlife Service	Yes	Yes

Who Testified	Oral	Written
Bill Robinson Trout Unlimited	Yes	No
Bruce Lovelin Executive Director Columbia River Alliance	Yes	Yes (video included)
David Bean Wild Salmon Nation	Yes	No
Jim Weber Policy Analyst Columbia River Inter-Tribal Fish Commission	Yes	Yes
Si Whitman Nez Perce Tribe	Yes	No
John Bracke Region 1 Vice President Oregon Outdoors Association	No	Yes
David Piper Pacific Northwest Generating Cooperative	No	Yes
Bob Eaton Salmon For All	No	Yes
Donald Sampson Chairman, Board of Trustees Confederated Tribes of the Umatilla Reservation	No	Yes
Kathleen Menke Crystal Images	No	Yes
Cathy Baer Sawtooth Wildlife Council	No	Yes
Gerald R. Bouck, Ph.D.	No	Yes* (also Tab 13)
James L. Buchal Direct Service Industries/ Pacific Northwest Generating Cooperative	No	Yes*

*Compiled written testimony was provided by James L. Buchal on behalf of the Direct Service Industries/ Pacific Northwest Generating Cooperative

National Marine Fisheries Service

Total Dissolved Gas Petition

Hearing Officer's Report

On Friday April 7, 1995 a joint public workshop on total dissolved gas on the Columbia River was presented in collaboration with the Washington Department of Ecology at DEQ's Northwest Regional Office at 2020 SW Fourth Avenue, Portland. In that workshop Donna Darm representing the National Marine Fisheries Service presented the Service's petition and background information. That was followed by presentations from the following people:

Gary Fredericks	National Marine Fisheries Service
Bolyvong Tanovan	Army Corps of Engineers
Margaret Filardo	Fish Passage Center
Jim Nielsen	Washington Department of Fish and Wildlife
Ron Boyce	Oregon Department of Fish and Wildlife
Tom Backman	Columbia River Inter-Tribal Fish Commission
Earl Dawley	National Marine Fisheries Service
Stuart Hammond	Grant County P.U.D.

At 2:00 p.m. a formal public hearing on the petition was held in the same location. The hearing closed at 6:00 p.m. after receiving testimony from all of those present and wishing to testify. The hearing officer was Kevin Downing, and Russell Harding assisted with note-taking. Approximately fifty people were present. Testimony was heard from 28 parties. That testimony is summarized below.

Donna Darm, Manager Environmental Policy, National Marine Fisheries Service, Northwest region.

The Columbia River spill program is an integral part of endangered salmon in-river augmentation, and is an essential component of the recovery effort. The 1994 return was the worst year ever for salmon returns, and 1995 is predicted to be even worse. The situation has reached the point that Snake River fall and summer chinook salmon have been listed as endangered, not just threatened. Considered in the context of salmon migration through the hydro-electric generating system, total dissolved gas versus turbine migration is a different concept than the setting of water quality standards for human health and the safety of aquatic life. The spill program will be accompanied by a full physical and biological monitoring program.

This issue should not be a political football. It is a technical issue and should be addressed at the technical level. The petition requests spill at the collector projects when flow is good and at the non-collector projects to achieve a fish passage efficiency of 80 percent, so that no more than 20 percent of fish are drawn through the turbines. This will mean fewer fish will need to be transported. The benefits of transportation are uncertain at high flow times. At low flow, fish will be transported at collector projects. Survival of fish through in-river migration is more certain than through transportation.

The petition seeks a 115 percent 12 hour average total dissolved gas level in the forebays. At this level, with super-saturated water mixing with water from the powerhouse, mixing will occur that will result in a lower dissolved gas level. The forebay is a good place to take measurements of the mixed water. It is also believed that fish can remain in the forebays for some days. An instantaneous high of 120 percent is sought, although the service believes the highest level of dissolved gas will be less than this.

The National Marine Fisheries Service does not consider high dissolved gas levels to be good for fish and it does not support them on a long term basis. Ultimately, the service would like to see the Army Corps of Engineers modify the dams so that the required spill could be achieved while remaining within the state's water quality standard.

Dennis VavRosky, Co-President Northwest Steelheaders

This is the largest association of sports fishers in the state. The association supports the request for spill believing that, conducted properly, spill results in significant improvements in salmon and steelhead smolt survival. The association recommends that the Commission accept the National Marine Fisheries service biological opinion and risk assessment.

Barry C. Beyeler, Public Works Director, City of Boardman

The City of Boardman is concerned about the effects of spill on its drinking water supplies. Coincident with last year's spills, the city had water samples tested by an Environmental Protection Agency certified laboratory. That analysis showed disturbing trends including quantifiable bacterial changes, and the disappearance of benthic organisms. Also during this time both the hardness and the alkalinity of the water doubled. While these are not harmful to human health, they are significant. While more study is required, the coincidence suggests that a link exists between the spills and changes in ground and surface water.

The City recommends that the Commission not waive its water quality standard.

Greg McMillan, Anglers Club of Portland

Laboratory research on the effects of dissolved gas on salmon smolts is correct as far as it goes, but laboratory research is only as valid as the least reliable method of measurement used. Other variables exist in nature, and these need to be taken into account. Other data should be evaluated including fish survival during last year's spills and fish survival in low versus high flow years. Petrovsky and Shaller (1992) state that Columbia River flows were high during 1974-76 and 1981-84, yet smolt survival was not impacted by the higher total dissolved gas levels associated with higher flow.

Transportation has high smolt mortality associated with it. The only viable alternative is spill over the dams. This is the least risk option. The club exhorts the Commission to approve the petition to spill, and not make the salmon extinct.

Tom Wolf, Chair, Oregon State Council for Trout Unlimited

Salmon are facing extinction, and barging has not helped. It is recognized that turbine mortality is high. While there is some danger in spilling, it is the best available option. Speaking on behalf of fishers, the Council supports the spill proposal.

Liz Hamilton, Pacific Fisheries Management Council and Northwest Sports Fishing Industry Association

On behalf of the Pacific Fisheries Management Council Habitat Committee Ms. Hamilton explained that one year ago the Pacific Fishery Management Council took prompt action on behalf of the salmon. The fisheries' agencies and tribes reduced barging in favor of controlled spill and reservoir draw-downs. The Council supports aggressive action for salmon in the Columbia and Snake Rivers. The 1995 outmigration is crucial for the survival of the stocks. The Council recommends a spill to achieve an 80 percent fish passage efficiency.

On behalf of the Northwest Sports Fishing Industry Association, Ms. Hamilton pledged strong support for the National Marine Fisheries Service petition to spill. The association represents businesses and jobs associated with fishing in the Northwest, including guides, wholesalers, hotels and motels. Jobs in this sector are declining due to salmon and steelhead stock depletion. Over \$1 billion has been lost in incomes over the last 10 years. Fishing closures and restrictions affect businesses. Fish populations cannot stand the status quo, and neither can businesses.

If the fisheries agencies are seeking to spill water, the Commission should defer to them. Professional scientists are paid by ODFW and the tribes to protect fish, and they are not going to recommend action that will endanger fish.

Spill doubles the survival rate of smolts at dams. Spill has been the main migration method of the past 14 years. Due to the hazards associated with transportation, the stocks are nearly extinct. While monitoring must take place during spills, the risk analysis is the best science available for fish migration, and it ought to be accepted. Spill will ensure the survival of smolts and adult returns. If the Commission grants the variation, the salmon may gain a foothold, if not they will die and become extinct.

Jack Gakstatter, Environmental Protection Agency, Region 10

Region 10 of the Environmental Protection Agency supports the National Marine Fisheries Service request to spill. There will be a net benefit to salmon recovery. The agency does not, however, support a long-term change in the standard. In the long term, the Corps and other operators should make improvements to the dams to enable spill at lower dissolved gas concentrations.

Mitch Sanchotena, Executive Coordinator Idaho Steelhead and Salmon Unlimited

Formed in 1985, the Idaho Steelhead and Salmon Unlimited represents guides and businesses in Idaho and eastern Washington. It has 2,000 members in 39 states, indicating a nationwide interest in Idaho's fisheries. Responding to testimony given by the City of Boardman, Mr. Sanchotena asked if the city has undertaken any analysis of its water during spills associated with acts of God or natural spills. Ice Harbor is exceeding the total dissolved gas standard today. It is a bold move to close the salmon commercial and some recreational fisheries.

Salmon runs were strong in the 1950s, 60s and 70s despite excessive spills. There were high spills in the 1960s and 1970 with no flip lips on the dams, and the fish were able to survive. In the 1970s with the slack water reservoirs built up by dams, barging was seen as the cure-all. barging enabled the federal government to put every drop of water through the turbines. In the period 1982-85 there was more melting snowpack and runoff than the dams could handle. This was all spilled with no objections. Indeed, during that time, adult salmon runs improved, as did the corresponding adult returns.

The majority of Bonneville Power Administration's customers would be happy to pay the added 1.1 percent for their electricity associated with the spill program. This compares with 49 percent associated with Bonneville's non-nuclear debt.

Marcia Anderson, Oregon Representative of Save Our Wild Salmon Coalition

This is a broad coalition covering sport, commercial and conservation fishing interests. The Coalition wishes to reinforce the views of its member organizations which advocate the use of spill to assist outmigrating salmon. The Commission needs to look beyond the issue of total dissolved gas levels to the question of what is the safest method of spilling fish downstream. The 1995 class is critical. The Coalition urges the EQC to look at fish killed by dissolved gas versus fish killed by going through the turbines.

Dianne Valentine, Oregon Natural Resources Council

The Council encourages the EQC to spill. Asking the right questions is important, such as what is the safest way to get fish downstream? If the options are barging, bypass or turbines, spill appears to be the best method. The Council believes the National Marine Fisheries Service petition is timid because of a perceived hostility of the Commission to spills. The EQC should present a friendlier face to salmon, and look beyond the letter of the law to its intent. Continuation of the status quo will lead to the extinction of the salmon. It is absurd for DEQ to stand in the way of science.

Thane Tienson, Salmon for All

Salmon for All is the commercial industry's voice. There are enough safeguards in the National Marine Fisheries Service documentation to ensure that risk to fish is kept to a minimum through around the clock monitoring. If there is danger, immediate steps can be taken. The petition is very conservative for political rather than biological reasons. Dissolved gas levels of 110 percent are exceeded routinely due to spill. No one expresses opposition at involuntary spill. The proposal is reasonable and modest. This could be the last chance for salmon, 1995 is a critical year. Economic interests are at stake in the recreational and commercial industries with the National Marine Fisheries Service having called for the elimination of the industry with the resulting destruction of fishing dependent communities with little economic diversity.

Larry Fidler, Ph. D.

Dr. Fidler has worked in the field of dissolved gas for 13 years. He was a member of the team review of monitoring on the Columbia River presented to the Pacific Northwest Power Planning Council. He is not opposed to spill, but wishes to recommend improvements. What he does oppose is the use of faulty science to justify spills. The National Marine Fisheries Service document is fine as far as it goes. He has no comment on transportation, and models were discussed in the earlier workshop.

Fidler believes that 115 percent in the forebay and 120 percent in the tailrace is too severe for fish. He advocates incremental spill with monitoring at each increment. The first increment would be 115 percent in the forebay with a 120 percent instantaneous maximum. If it is determined that there are no adverse signs in the fish, spill could be increased to 120 percent in the forebays and a 125 percent peak. If adverse signs are detected, a decrement of 5 percent spill should be applied. Incremental spill allows the system to be operated responsibly.

Monitoring downstream could be too late. At that stage gas bubble trauma may have already developed. A small number of fish should be sacrificed for internal signs. Fidler emphasized the importance of the monitoring site. In the Columbia River, total dissolved gas is highest below the spilling bay. While there is some mixing of supersaturated and non saturated water, it is variable. Below Ice Harbor in 1994, there was very little mixing. At McNary the separate plumes of saturated and non-saturated water can be detected. Lower in the Columbia, the plumes mix more quickly. Monitoring for visible signs of gas bubble trauma in the gill filaments and lateral line are not good indicators of the state of a fish. There may not be any external visible signs, but internally there may be signs in the gills. Signs of gas bubble trauma show up in the gills more than the lateral line.

High hydrostatic pressures may mask the incidence of gas bubble trauma. Monitoring needs to be altered to take this into account. The EQC should set standard procedures so that we can learn from this spill, rather than leaping to a level that is going to cause severe damage. The level of dissolved gas determined for this spill needs to be enforced.

Don Chapman, Chapman Consultants

Transportation should remain the preferred migration tool of choice. Non-collector spill should still occur for flow management during which smolt survival could be studied. Survival through spill is better than survival through the turbines, does not address the effects of spill at any particular dam, and subsequent turbine mortality at another downstream dam. Also the risk of multiple exposures to high concentrations of dissolved gas are not addressed.

Chapman relies on experimental data within models. In 1995 smolts will travel through high level waters due to the snowpack and high runoff. In-river migratory survival is 62.5 percent that of transportation survival. In 1986 fish were marked with a brand, and those returning with the brand were recorded. The ratio of returning fish that had been transported versus those that remained in-river were 1.6:1. The ratio between McNary and Lower Granite dams was 1.55:1.

Spill due to high flows assisted in 1986. It does not necessarily follow that increased spill will help in 1995. Survival of wild transported salmon smolts is better than transported hatchery smolts. The poor returns in 1994 and 1995 reflect different in-river conditions. In 1992 there were low flows and no spills, whereas in 1993 there was above average flow and spill. The statements made by studies have ignored ocean variability. Relaxation of the total dissolved gas standard will do no favors to smolts. Juvenile salmonids are better in barges.

Wes Ebel, formerly Director of the National Marine Fisheries Service Coastal Zone Section

Dr. Ebel has worked on the Columbia River for 30 years. He agrees with Don Chapman. Revisiting the discussion from the workshop, the National Marine Fisheries Service estimated fish passage as a 1:1 ratio of fish to water. In fact it is closer to 60 percent by day and 40 percent by night. The National Marine

Fisheries Service has claimed that guidance at all dams is 50 percent, whereas guidance is substantially higher than that. At Lower Granite it is 50-80 percent, at Little Goose 75 percent, at McNary 80 percent, and at John Day 72 percent. While these figures may not be accurate, they are indicative. Fish do not pass dams in 1:1 ratios. With an additional 20 percent spill, 40 percent of the fish will pass the dam. At John Day 44-56 percent more fish passed the dam than the volume of water spilled. The 80 percent fish passage efficiency was achieved without exceeding the 115.

The state and tribal "1995 Spill and Risk Assessment" cannot be relied upon to support increases in allowable Total Dissolved Gas. Dr. Ebel reports various errors in the use of values that have driven the risk assessment model.

Jim Anderson, Associate Professor, University of Washington

Dr. Anderson has been at the University of Washington for eight years where he teaches ecological modeling. In particular he has been developing the CRiSP model which embodies the ecology of a system expressed as mathematical equations, calibrated against data sets. He believes that 1982-86 are anomalous years and that spill does not give higher survival. A balance of competing benefits exists. Spill may assist fish, but it creates high levels of dissolved gas. If the spill is high enough, the negatives may outweigh the benefits. This needs to be quantified. A little spill may be good, but a lot is bad. Transportation, on the other hand, does work. Any spill that decreases the number of fish to be transported, lessens fish survival. The central question is, how much spill tips the balance from beneficial to not beneficial to fish? This depends on the balancing of several factors. at 125 or 130 percent, we are sitting on the edge. Correlations to past events are not sound scientific analysis.

Mortality rates are depth sensitive, rising at shallower depths. Fish depth is one of the critical factors. Another critical factor are the number of days of exposure to supersaturated water. At no position on the model are there benefits in a spill program.

If the CRiSP model is applied to NMFS' spill program the model predicts a decrease in the survival of migrating spring chinook salmon by at least 2.5% and possibly more. Dr. Anderson gave a pictorial demonstration of his model. Copies of overheads from his presentation are attached to this report.

Charles Ray, McCall, Idaho, Idaho Rivers United

The 1995 outmigration is critical for survival of salmon stocks. Projected hatchery releases for 1995 are eight million smolts, 1.6 million for 1996, and 0.5 million for 1997. Corresponding estimates for wild stocks are 1.2 million in 1995, 200,000 in 1996, and less than 100,000 in 1997. This is the last year to maximize spring and summer smolt survival for Oregon and Idaho, and also the 12,000 sockeye in Redfish Lake.

There are a number of policy issues. Idaho citizens do not see this as a water quality issue or a management issue. There are a number of policy issues that are clouded by uncertainty. This has degenerated from being a clear, black and white, issue to being clouded. This has occurred through a deliberate attempt to obscure the issues by individuals and groups not concerned with water quality. The same interests concerned today with water quality were silent during high flow periods when voluntary spills produced high dissolved gas levels. These industries have never advocated adherence to water quality standards until today. They are concerned about total dissolved gas in the future, but are not today. Today at Ice Harbor dissolved gas levels exceed the standard due to spill because there is insufficient electricity demand. They have three reasons for their opposition:

1. Concern about power production;
2. Spill during the spring is the first incremental step in a major overhaul needed in the river system. Their view is that if they can block the first step, they can stop the wider review from happening;
3. Spill in 1995 begins to remove uncertainty in river management.

Spill this year will make the river a little safer, and bring it closer in safety to transportation. They don't want to see what a safe river looks like, they prefer the certainty of barging. Transportation has been the extinction of the stocks. Despite 20 years of transportation the certainty of these stocks is at an all-time low.

The EQC should defer to the fisheries agencies and tribes. If these agencies recommend spill, then they should be heeded. It is at a pivotal point, do we want to doom the fish, or take a small incremental step to save them. The Idaho public testified in favor of spill at the dams.

Chapman testified that snowpack is high. Yet, on the Snake River above Lower Granite, snowpack is 90 percent of average.

Randy Chatfield, Tillamook Guide's Association

The Association represents 100 professional fishing guides and supports the spill. It believes the EQC should defer to the fisheries agencies. Spilling is the most efficient and productive means to improve fish runs.

Glen Spain, Northwest Regional Director, Northwest Coast Fishermen's Association

This is the largest commercial fishing association with members from Alaska to California. It supports the National Marine Fisheries Service proposal. This is the industry that has been affected more than any other in the decline of salmon stocks. The time has come for definitive, bold actions. What has been done to date has failed. A major element contributing to that failure has been transportation. The issue here is not transport versus spill. Transportation was an experiment that began in 1968. It was never subject to NEPA review. NEPA was not passed until 1971. The National Marine Fisheries Service is now under order to conduct that analysis.

The Spill and Risk Assessment demands major changes. Turbine mortality is a significant factor. The average mortality through turbines at dams is 15-20 percent, although it varies dam by dam from 8 percent to 32 percent. The issue is one of turbine mortality risk versus the benefit of spills. The risk analysis evaluates turbine mortality versus mortality from spill due to elevated total dissolved gas. Transportation will continue despite spills. We can go a long way with spill before mortality due to total dissolved gas reaches the mortality from turbines.

The proposed program is conservative, with a safety factor of six times built in. That is, only one sixth of mortality will occur at 120 percent dissolved gas than would occur due to turbine passage. The risk to sockeye is one tenth. Spills happen routinely and have done for a long period, with no observed mortality. What is proposed is to take an event that happens throughout the year, and altering its timing to assist outmigrating salmon. All that is involved is a difference in timing, with no change in quality or quantity. Celilo falls had dissolved nitrogen associated with them, and the fish adjusted. Depth is an important aspect of fish adaptation to elevated gas levels. The equivalence is that one foot in depth is equivalent to 3

percent dissolved gas concentration. Fish are able to adapt to increased nitrogen by sounding. At levels below 130 percent the potential for mortality is minimal, certainly less than turbine mortality. The Association prefers the Risk Assessment because it is based on observed science, not models.

The National Marine Fisheries Service proposal involves intermittent exposure, not long term exposure. The 115 percent proposed is de minimus. There is a risk from doing nothing. There is an estimated economic loss of \$600 million per year removed from the recreational, commercial, and tribal incomes, translating to 20-30,000 family jobs lost due to mismanagement of the hydropower system.

Kelly Murphy, Northwest Environmental Defense Center

The Center strongly supports the waiver request. It is time to take bold steps. The irony is that all the government agencies support the spill. The main objectors are the companies with a history of water quality violations. The Direct Service Industries present themselves as the saviors of the salmon, but they are really here to protect their economic interests.

Raphael Bill, Confederated Tribes of Umatilla

The Tribes urge the Commission to grant the variance, and to consider allowing even more spill to assist outmigrating salmon. In particular, the Tribes would like to see dissolved gas levels of 120-125 percent, an extension of the spill date to September 30, 1995 and a maximum of 135 percent based on a six hour average.

Numbers of outmigrating salmon will drop catastrophically over the next three years. Barging is still not working. The best method of assisting fish migration is to tear out the dams, although he did not advocate this. Given that, spill is the best viable method of assisting fish. Approval of this spill program will play a major role in determining if the fish live or die. A failure to act will eliminate both salmon and jobs. Total dissolved gas levels of 120-125 percent are conservative compared to other methods. The Tribes support the longer spill period to assist the fall chinook. The Tribes have treaty rights to the fish. If they thought any harm could come of spilling, they would not support it. The variation will not involve mortality to salmon, indeed, the Tribes seek a more generous variance.

Tom Cooney, Columbia River Coordinating Group, Washington Department of Fish and Wildlife

The Department strongly supports the spill. There is considerable uncertainty associated with each long term path. The Northwest Power Planning Council has evaluated improvements to the dams, spill, flow, and survival. The question is, how do we operate the system in the interim? The National Marine Fisheries Service has a long term plan, and it is supported by the Department.

National Marine Fisheries Service is hedging its bets by having some transportation, and this year's spill will improve in-river conditions for salmon. The Department is not advocating unrestricted spill. In the long term, modifications need to be made to the dams. The Department participated in the Risk assessment, and in the preparation of a response to the Washington Department of Ecology. The Risk Assessment is not based just on modeling, but on empirical data. The spill management and monitoring plan is conservative, and balances risk, and provides the basis for embarking on a future course of action.

Dan Diggs, Columbia Basin Eco-Region, United States Fish and Wildlife Service

Mr. Diggs represents Region 1 of the United States Fish and Wildlife Service, that cover the western states of Nevada, California, Pacific Islands, Idaho, Washington and Oregon. The Service fully supports the National Marine Fisheries Service request. The United States Fish and Wildlife Service is a national resource agency and has fully reviewed the literature. It has also looked at the Spill and Risk Assessment report. The service sees the Risk report as compelling as well as the safest course of action. The 1995 outmigration is critical. Salmon survival in the Columbia River is threatened without spill. The EQC should provide a variation to the dissolved gas standard upon being shown by the fisheries agencies that the balance of risk supports the spill. The best scientific knowledge is contained in the National Marine Fisheries Service documentation. Ironically, the states wrote to the Federal Government to save the salmon, and now the federal Government is having to appear before the states. The federal Government is now saying that you hold the trump cards, give the request strong consideration.

Tony Nigro, Project Manager Columbia Basin, Oregon Department of Fish and Wildlife

The text of a letter from Oregon Department of Fish and Wildlife to DEQ and the Washington Department of Ecology was read, and written testimony was submitted.

In the letter Oregon Department of Fish and Wildlife supports the National Marine Fisheries Service short term modification. Listed populations of salmon are in crisis. From a migration of two million annually in the 1880s, we now have less than 2,000. If the present trend is not reversed, their survival cannot be assured. Population monitoring needs immediate improvement. With the present configuration, populations cannot be rebuilt with any single measure. The number of salmon killed through the turbines could be reduced. Currently 20-30 percent go through the turbines. With the lack of effectiveness of by-pass systems, spill is the only way around the turbines. The benefits of reducing turbine mortality exceed harm from total dissolved gas. In the Risk Assessment submitted as written testimony, spill is proposed through a range of scenarios with associated monitoring. The request is reasonable, but conservative.

There were three additional comments in response to earlier testimony:

1. Oregon Department of Fish and Wildlife is preparing responses to comments received on the Risk Assessment, but the weight of the comments does not alter the conclusions;
2. Dr. Chapman's testimony is not based on empirical science. The Department agrees with the independent peer review that shows that transportation will not help the stocks; and
3. Dr. Anderson has omitted key elements in his CRiSP model, such as the effectiveness of transportation and the velocity of waters in reservoirs. These need to be evaluated.

Bill Robinson, Region Nine of Trout Unlimited

Trout Unlimited supports the position of National Marine Fisheries Service. It is conservative. Spills have happened in the past, to do otherwise now is not reasonable. We can blame river conditions or El Nino, but if no smolts survive, this is unhelpful. Total dissolved gas levels of 115-120 percent are not out of line.

Bruce Lovelin, Executive Director, Columbia River Alliance

Do the right thing, bring back the salmon. We have not been doing the right thing in recent years. Some frustration is leading us to grasp at straws, and that is what this proposal is. If 1995 is the critical year for salmon, it is the last year we should be considering spills. In a February 8, 1995 memorandum Bob Baumgartner of Oregon DEQ raised concerns about flaws in the risk assessment. Not enough time has been given to comment on the proposal. The alliance submitted a video of spill. The spill is 40-50 feet deep, and the fish are propelled from the dam, where seagulls are circling. The birds are there for a reason. The Dalles dam has a cannon to scare them away. Seagulls pick up the dead and confused fish. Spill creates a great deal of turbulence.

At Dworshak Dam, spill occurs at the midpoint of the dam which has outlet structures. One unintended effect of the spill was the loss of fish from the reservoir.

Monitoring is a problem due to not looking for internal signs of gas bubble trauma. We need to look at this on a more scientific basis. Not only are we talking about endangered salmon, but a whole ecosystem. In 1994 there was no monitoring, yet it was called an experiment. What did we learn? The Alliance has economic concerns. In 1994 the Federal Government paid. In 1995 President Clinton said the Federal Government will contribute \$70-100 million. What is the complaint? If all this assistance is being spent, why are the economic interests opposed to the plan? Because the proposal harms fish. We need to listen to the experts, be cautious, and put in place a good monitoring program. The EQC should deny the petition.

David Bean, Wild Salmon Nation

The Nation has 1,500 members who eat salmon, they like the food.

The nation would like to see this as the last time they have to have this hearing. It is not an appropriate forum to bring National Marine Fisheries Service to a halt in its efforts to save the salmon. It is an inappropriate venue to be discussing this issue. We need to allow latitude for new directions, the past has not worked. The Nation endorses the Confederated Tribes of Umatilla statement.

Jim Weber, Policy Analyst, Columbia River Inter-Tribal Fish Commission

The Commission supports the National Marine Fisheries Service proposal, although it does not go far enough. More spill is needed to achieve the 80 percent fish passage efficiency. We need to look at who is telling us what. Look at the interests of those who testify.

The Tribes, 140 years ago, signed treaties in which they gave up land and reserved the right to take fish at their customary places. A right to take fish is meaningless if there are no fish to take. The primary objective is to rebuild the runs. The Tribes are second only to the salmon with their interests.

Transportation is a peculiar concept in relation to the Clean Water Act. The focus of the Act is on safety for beneficial uses, *i.e.* to make the river fishable and swimmable. We now barge the fish out of the river. We remove the beneficial use from the river where it belongs. The EQC needs to review what right it has to ignore removal of a beneficial use from the river.

Written submissions were made including responses to Bob Baumgartner's comments.

Si Whitman, Fishing Manager, Nez Perce

The Council endorses comments made by the Columbia River Inter-Tribal Fish Commission, the Confederated Tribes of Umatilla and the proposal of National Marine Fisheries Service. A total dissolved gas level of 110 percent is too conservative, given that it is routinely exceeded. The effect of this level on fish is too low to be useful. Laboratory studies have focused on low water depth. Under normal conditions fish have the ability to seek depth compensation. A dissolved gas standard of 120-125 percent should be approved on a temporary basis.

This is necessary to get around transportation. Transportation should only be used when it is detrimental to allow fish to remain in the stream. There are enough detrimental causal factors against transportation thus far. Spill is only a tool, it is not a permanent fix, but it does give us an opportunity.

The following is a summary of written submissions presented independently of oral testimony given at the hearing.

Pacific Northwest Generating Cooperative

The issues raised by the request for variance of the Total Dissolved Gas Standard are sufficiently technically demanding that the Commission should hear directly from expert testimony regarding this matter. The EQC is urged to amend its timetable for consideration of this issue to enable direct testimony from the expert parties in favor and opposed to the variance and from the public, in favor and opposed.

Oregon Outdoors Association

Representing 400 members, the Association supports the National Marine Fisheries Service proposal. The Association's membership relies on healthy salmon fisheries and tourism. Salmon are important to the history, recreation and economy of the Northwest.

Salmon For All

Salmon for All is a 850 member trade association. At 37 years old, it represents a gillnet industry that has survived for 130 years. It fully supports the National Marine Fisheries Service proposal to spill.

Confederated Tribes of the Umatilla Indian Reservation

This submission was sent to the Governor, and copied to DEQ. The Confederated Tribes support the granting of a variance to the state's water quality standard for total dissolved gas. Outmigration of salmon is likely to drop catastrophically over the next three years.. The 1995 outmigration is likely to be the last reasonably good one. If measures are not taken to protect the spring migration, these fish face extinction. Maximization of survival is dependent on improving in-river conditions for migration. Spill is the surest and safest way to transport fish to the sea.

The temporary relaxation of the total dissolved gas standard will not lead to greater mortality, while failure to act to provide adequate spill for salmon will doom salmon to slaughter in the turbines. More fish will be killed without spill than with its controlled implementation.

Kathleen Menke, Crystal Images

The total dissolved gas standard for the Columbia River needs to be relaxed. The risks to salmon from gas supersaturation are overestimated, they fail to consider the comparative risks of the alternatives. Survival improves at dissolved gas levels as high as 136 percent, provided exposure times are reduced.

Of particular concern are sockeye which are susceptible to kidney disease. They are particularly adept at adapting to, or avoiding, gas bubble trauma, and it would be "criminal" to place them in barges with potential disease bearing fish.

Oregon DEQ should grant the petition for an increased total dissolved gas standard.

Sawtooth Wildlife Council

The Council concurs with the position that saturated gas levels can be elevated in the river provided water velocities are improved. The EQC is urged to grant a variance to the standard as high as 130 percent. Studies by Ebel and Raymond support improved survival of fish with saturation levels as high as 136 percent, provided river velocities are improved. Studies showing fish mortality using boxes are flawed in this respect. The status quo poses a higher risk to fish than elevated total dissolved gas levels.

Gerald R. Bouck, Ph.D

Dr. Bouck began his work on dissolved gas in the 1960s, and has over 20 scientific publications on the subject. While retired, he maintains an interest in the issue as a citizen scientist. Dr. Bouck is heartened by the admission by agencies that total dissolved gas is a serious problem. He sees the National Marine Fisheries Service 1995 request as being more reasonable than its 1994 request. He remains concerned, however, that 12 hour average gas levels of 120 percent below the spillways could create large masses of water with gas levels in the range of 200-300 Torr (126-140 percent of barometric pressure.). Salmon smolts migrating through these waters could be exposed to the higher gas levels for indefinite periods which could be sufficient to cause mortality and morbidity to a small portion of the population.

The loss of a small portion of the population is critical because the benefits from spill are seen as being relatively small. Spillage to divert 10 percent of smolts away from turbines results in only 1.3 percent survival per dam, yet raises gas levels to 200-300 Torr. Five percent mortality at 300 Torr occurred after 1.6 hours, and averaged 5.6 hours at 200 Torr. Exposure to supersaturated water can indirectly kill smolts by increasing their susceptibility to predation.

Bouck concludes that the benefits of spill can be negated very easily by the expected levels of gas supersaturation.

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION

In the matter of the National Marine Fisheries Service's request to spill water to assist out-migrating Snake and Columbia River salmon smolts (ORDER
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WHEREAS the Department of Environmental Quality received a request from the National Marine Fisheries service on March 27, 1995, to adjust the Total Dissolved Gas standard as necessary to spill over dams on the Columbia River, commencing at midnight on April 19, 1995, and finishing at midnight on August 31, 1995, to assist out-migrating Snake and Columbia River salmon smolts.

WHEREAS the public was notified of the request on March 28, 1995, and given the opportunity to provide testimony at 2:00 p.m. on April 7, 1995, and the opportunity to provide written comments until 5:00 p.m. on April 7, 1995.

WHEREAS the Environmental Quality Commission met on April 14, 1995 and considered the request, justification and public comment:

THEREFORE the Environmental Quality Commission orders as follows:

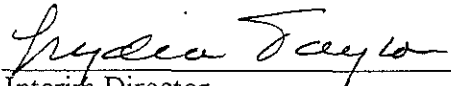
1. The Commission found that:
 - a) Failure to act will result in juvenile salmon swimming through the turbines. Smolts swimming through the turbines have significantly greater mortality than those passing dams through increased spill. Mortality through the turbines is estimated at 10-15 percent, versus an estimated 2-3 percent over the spillway. Estimates of fish passage efficiency and total dissolved gas levels are provided in Appendix A, Table 1 of the staff report;
 - b) The balance of risk of impairment due to elevated total dissolved gas levels needs to be balanced against mortality of turbine passage. In their response to the state and tribes Spill and 1995 Risk Assessment, National Marine Fisheries Service's scientists estimate that turbine mortality equals mortality from total dissolved gas at around the 120 percent level. This is viewed as a conservative estimate. Given this conservative estimate, the balance of the risk of impairment seems tipped in favor of granting a variation of the total dissolved gas standard. This perception was stated by a number of parties in their public comments;

- c) The National Marine Fisheries Service submitted a detailed monitoring plan with its petition. Physical monitoring will take place at the forebays and tailraces of McNary, John Day, Dalles and Bonneville Dams. Tailrace monitoring at Bonneville will take place at Warrendale/Skamania. Transect measurements will also be taken at each of the four dams.
 - d) Biological monitoring is an integral part of the National Marine Fisheries Service's monitoring plan submitted in support of this petition. In addition, a committee, which includes participation by the Department, has been established to oversee the spills. The results of physical and biological monitoring will be available to this committee which will recommend any necessary action in the event of adverse impacts on salmonids due to elevated gas levels. The Department will monitor the spills carefully to ensure that they comply with any revised standard set by the Commission.
2. The Environmental Quality Commission approves a modification to the Total Dissolved Gas standard for spill over the Columbia River dams subject to the following conditions:
- a) implementation of the physical and biological monitoring regime as detailed in the monitoring plan submitted by the National Marine Fisheries Service dated April 7, 1995;
 - b) a revised total dissolved gas standard for the Columbia River for the period from midnight on April 19, 1995 to midnight on August 31, 1995;
 - c) a modification to the total dissolved gas standard for the Columbia River of a daily (12 highest hours) average of 115 percent as measured at established monitors at the forebay of the next dam downstream from the spilling dam during this time;
 - d) a further modification of the total dissolved gas standard for the Columbia River to allow for a daily (12 highest hours) average of 120 percent as measured at established tailrace monitors below the spilling dams during this time;
 - e) a cap on total dissolved gas for the Columbia River during the spill program of 125 percent, based on the highest two hours during the 12 highest hourly measurements per calendar day during this time; and

- f) that the Director halt the spill program if any outmigrating smolts, returning adults, or resident fish populations show signs of gas bubble trauma indicating significant risk of harm.

Dated: 4/14/95

ON BEHALF OF THE COMMISSION



Interim Director



Columbia River Alliance

For Fish, Commerce and Communities

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April 7, 1995

Mr. Russell Harding
Department of Environmental Quality
811 S.W. Sixth
Portland, Oregon 97204

RE: CRA Comments to Oregon DEQ and Washington DOE Regarding the
Proposed Spill Program and Pollution Waiver

Dear Mr. Harding:

The enclosed CRA Issue Backgrounder and video tape expresses our views and concerns for the proposed waiver. The CRA is strongly opposed to the request by NMFS and recommend denial by state agencies. The scientific information is abundantly clear: exceeding 110 percent dissolved gas levels risks not only the endangered salmon but all salmon, steelhead, and other aquatic species. The theoretical gains to a few endangered salmon are not worth the risks.

Respectfully,

A handwritten signature in cursive script that reads 'Bruce J. Lovelin'.

Bruce J. Lovelin
Executive Director

Enclosure

cc: Washington Department of Ecology

1995 Spill Backgrounder

Alliance Backgrounder Columbia River Alliance for Fish, Commerce and Communities April, 1995

NMFS proposes spill on Columbia/Snake

In a March 22, 1995, letter, the National Marine Fisheries Service petitioned the Oregon Environmental Quality Commission and the Washington Department of Ecology for a water quality standard waiver that would allow NMFS to spill massive amounts of water over the dams on the Columbia and Snake Rivers. NMFS hopes that sending the river through the spill gates will increase salmon survival. The spill program would occur this month through the end of August.

NMFS must seek the permission of the states to conduct the spill because the proposal would violate federal and state water quality standards that control the levels of atmospheric gases in the water.

Current state and federal standards hold dissolved gas levels to 110 percent concentration. NMFS has proposed exceeding that standard to 120 percent average dissolved gas concentration for the entire Snake and Columbia River system.

NMFS has proposed the spill program because it hopes that propelling juvenile salmon through the dams will increase their survival.

But the spill, which propels the fish under spillway gates and drops them down the face of the dam into the frothy water below, will likely harm more fish than it helps.

Experts in the field of gas bubble disease believe the 110 percent standard should remain in place.

Larry Fidler, an expert on gas

Environmental Quality.

Spill regime's history is not a good one:

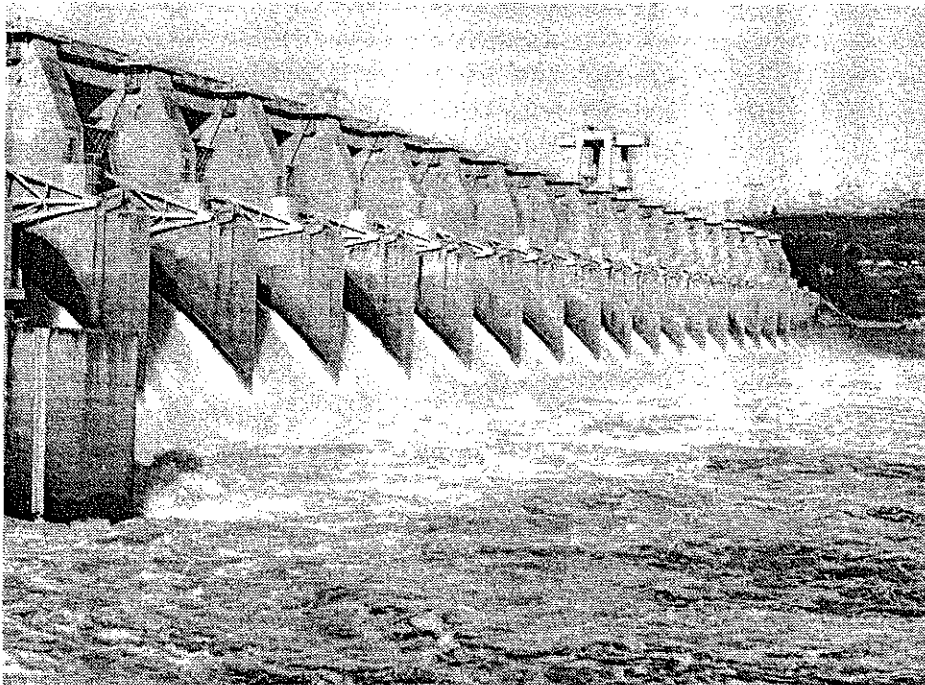
■ Last month, the Oregon Environmental Quality Commission rejected a proposal to elevate gas levels above the 110 standard for a spill at Bonneville Dam for the Spring Creek Hatchery.

■ Earlier this year, more than 60,000 juvenile fish died from gas bubble disease when the Willamette River became nitrogen-supersaturated. Gas levels reached about 114 percent during the Willamette River "fish kill."

■ Last spring's spill at only a portion of the rivers' reservoirs was aborted mid-program and considered a resounding failure. Signs of gas bubble disease appeared in the majority of fish examined.

■ No scientific evidence has emerged since last year's spill debacle to suggest that the 1995 regime is safe for juvenile or adult salmon.

■ The cost of this spill could rise as high as \$50 million. Last year's program cost \$43 million.



The reservoirs on the Columbia and Snake Rivers may look like this all summer if NMFS's spill program is instituted. (Photo taken at The Dalles Dam, spring spill, 1994)

bubble disease, said that gas levels even below 115 percent can be lethal. "We have clear evidence that dissolved gas levels of 114 percent to 117 percent kill large numbers of fish in a short time," even in a river where fish can theoretically move away from extreme contamination, Dr. Fidler said in a February letter to the Oregon Dept. of

10 reasons scientists agree spill is a bad idea

Gas Bubble Trauma Defined

“Excess nitrogen enters the circulatory system of the fish and diffuses out, causing as bubbles or emboli in the circulatory system and gas bubbles under the skin. These gas bubbles have a number of adverse physical effects. Gas bubbles occlude blood flow in the gills, thus suffocating the fish. Gas bubbles also occlude the mouth and throat of the fish, and can cause blindness in the fish due to hemorrhaging...The gas bubbles can also result in overextension or rupture of the swim bladder, particularly in juveniles under 50 mm in length. Collectively, these symptoms are referred to as gas bubble disease.”

--Affidavit of Dr. Wesley Ebel, March 14, 1995

1. The NMFS proposal will kill fish; research conclusively demonstrates mortality

Research shows that increased dissolved gas produces high mortality. In one experiment, fish were held 3-5 feet below the surface of the water. At 120 percent total dissolved gas, 80 percent of the fish died. At 123 percent total dissolved gas, mortality jumped up to 97 percent.

--Larry Fidler, in his Ph.D. Thesis, “Gas Bubble Trauma in Fish,” Dept. Of Zoology, University of British Columbia, 1988

2. Mortalities from gas bubble disease are well-documented

In an experiment at Ice Harbor Dam in 1970, juvenile fish were subjected to dissolved gas levels of 127 percent. For fish held at the surface of the water, 98 percent of the fish died within 24 hours, and 97 percent of those surviving had symptoms of gas bubble disease. Of those held nearly one meter below the water, where they may have avoided some of the nitrogen-rich water, 98 percent died within 48 hours and 92 percent of the survivors suffered symptoms.

--Wes Ebel in his 1971 report: “Dissolved Nitrogen Concentrations in the Columbia and Snake Rivers in 1970 and Their Effects on Chinook Salmon and Steelhead Trout,” NOAA Technical Report., NMFS SSRF-646, p 7

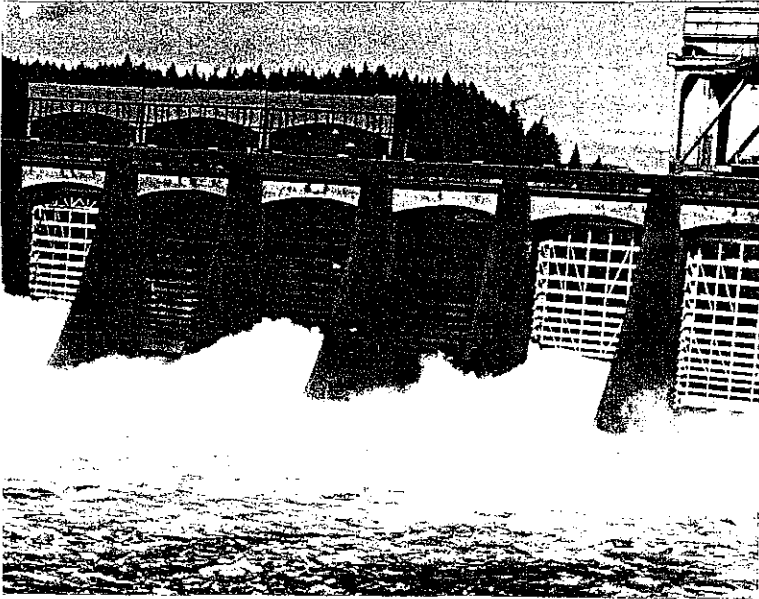
Signs of Gas Bubble Trauma in Salmonids		
Sign	TDG Threshold	Age/Class
Cardiovascular bubbles	acutely lethal at 115-118%	juveniles & adults
Subdermal emphysema including lining of mouth	110%	juveniles & adults
Bubbles in lateral line	110%	juveniles & adults
Overinflation of swimbladder in small fish	103%	swimup fry & adults
Rupture of swimbladder in small fish	110%	swimup fry & adults
Exophthalmia and ocular lesions	unknown, 102% for ocular lesions	juveniles & adults
Bubbles in intestinal tract	102-110%	juveniles & adults
Loss of swimming ability	106%	juveniles & adults
Reduced growth	102-105%	juveniles
Immuno suppression	>108%	juveniles & adults
Reduced ability to adapt to saltwater	some research indicates problem	juveniles

Source: NMFS Gas Bubble Disease Panel, June, 1994

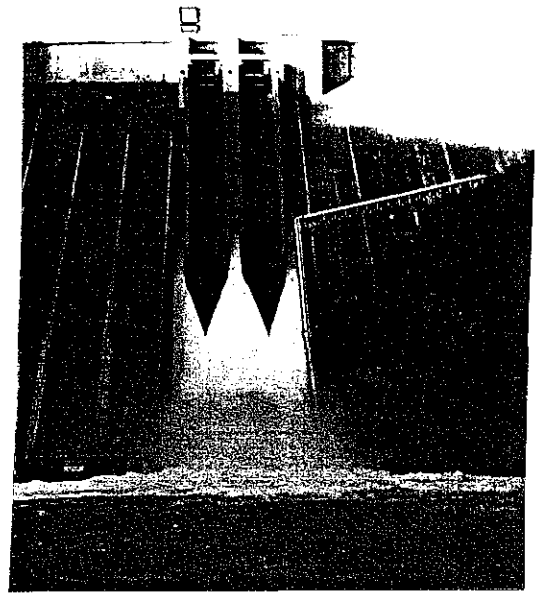
3. External monitoring is inadequate to detect harm to salmon

“...the extent of GBT (gas bubble trauma) signs in fish could not be determined from external visual examination alone, but

1994 SPILL PROGRAM



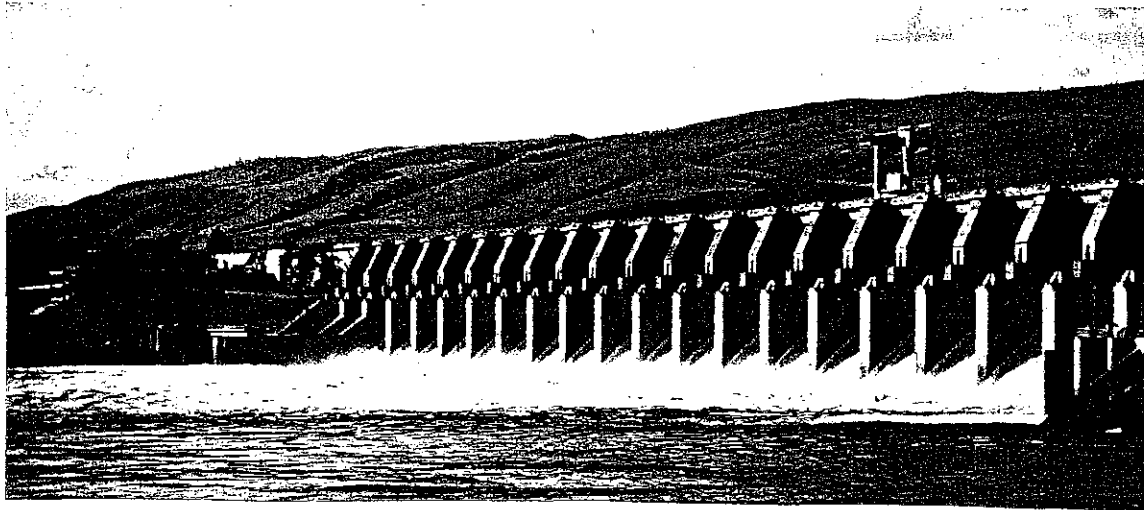
1. Bonneville Dam Spill, May 14, 1994. Fish kill evident by high number of sea gulls



2. Dworshak Dam spill causing gas levels in excess of 120%, July, 1994



3. Kokanee fish kill from spill at Dworshak
Estimated 100,000 fish lost, July 1994



4. Spill at The Dalles Dam, May 14, 1994 created
delay of adult fish to locate fish ladders

RECORDS OF SALMON MORALITIES CAUSED BY SUPERSATURATION

Merrell, Collins and Greenough. 1971

location: Bonneville Dam
date: 1955
species: chinook--adult
evidence: carcasses observed, estimated 16.8% of total run killed unmeasured, mortality associated with high spill
sat: unmeasured, mortality associated with high spill

Westgard. 1964

location: McNary Spawning Channel
date: 1962
species: chinook--adults
evidence: GBD symptoms, 34% of adults
sat: 119% (N₂)

Pauley, Fujihara and Nakatani. 1966. Pauley and Nakatani. 1967

location: Rocky Reach Dam--aquaria and Priest Rapids Spawning Channel
date: 1965
species: chinook--juvenile and adults
evidence: GBD gross symptoms and histopathology, adult mortalities
sat: unreported

Meekin, 1971. Eble. 1969

location: Priest Rapids Dam
date: 1966
species: chinook, sockeye--adults
evidence: mortalities
sat: 120-130%

Beiningen and Ebel. 1970

location: The Dalles Dam, fish held for inspection
date: 1968
species: chinook, coho, sockeye, steelhead--juveniles and adults
evidence: GBD symptoms up to one-half fish, high mortalities of juveniles held for inspection; estimated 20,000 adults killed, carcasses observed
sat: 123-143%

Bouck, Chapman and Schneider. 1970

location: John Day Dam, Bonneville Dam
date: 1968, 1969
species: sockeye--adults
evidence: GBD symptoms--3 or 7 (1968), 13 of 129 (1969)
sat: 118%

Ebel. 1971. Raymond. 1970

location: Ice Harbor Dam
date: 1970
species: chinook, steelhead--juvenile, adults
evidence: 70% of chinook between Whitebind and Ice Harbor, symptoms of 30% of adults.
sat: 120-140%

Meekin and Allen. 1974

location: mid-Columbia River (Wells to Priest Rapids Dams)
date: 1965-1970
species: chinook, Sockeye, Steelhead--adults
evidence: estimated 6-60% mortality; carcasses observed when saturation reached 120% or higher
sat: variable

required accompanying microscopic examination of gill lamella and lateral lines.”

--Dr. Larry Fidler, Aspen Applied Sciences, Inc., in a letter to the Oregon Dept. of Environmental Quality, March 13, 1995

4. By the time signs of gas bubble disease are externally visible, salmon may have already been killed

At a May, 1994, spill at Ice Harbor Dam, “it is evident that there were significant levels of observable signs of GBT (gas bubble trauma) and mortalities in net pen fish below Ice harbor Dam for the entire period. For May 23 through 27, 1994, up to 37 percent of the fish had observable of GBT with 1 mortality in the 8 fish sampled (*i.e.*, 12.5 percent mortality). At this time, dissolved gas levels were on the order of 118 percent.”

--Dr. Larry Fidler, Aspen Applied Sciences, Inc., in a letter to the Oregon Dept. of Environmental Quality, March 13, 1995

5. Fish will not move away from nitrogen-supersaturated water, even if non-gassed water is available

During the “fish kill” on the Willamette River in February, the 60,000 juvenile fish that died could have sounded and moved to water that was not nitrogen-supersaturated. The fish, however, did not sound away from the supersaturated water. Oregon Dept. of Fish and Wildlife personnel estimated that the dissolved gas supersaturated water arrived at the Willamette River net pens February 18, 1994. Mortalities were first noted three days later. Dissolved gas levels in the river were measured at 116 percent on February 21, and 117 percent on February 27. In the net pens themselves, dissolved gas levels were 113-114 percent on February 22 and dropped to 110 percent by February 24.

The net pens were eight feet deep. At a total dissolved gas level of 117 percent, the fish could have sounded down 2.8 feet for protection from some of the effects of gas bubble disease (swim bladder overinflation, extracorporeal bubbles between gill lamella and vascular system bubbles). Sounding to a depth of only one foot would have protected the fish from bubble formation in the vascular system. Yet the fish did not sound to avoid gas bubble disease and died.

6. Survival does not increase under spill regime

“Direct turbine mortality at this powerhouse (Bonneville) has consistently been estimated at 1-4 percent--not terribly different than spill mortality.”

--Affidavit of Dr. Wesley Ebel, March 14, 1995

7. Spill can kill returning adult salmon

“High spill at dams may lead to confusing tailwater currents that make it difficult for adults to find fishway entrances...For example, in 1968, when excess water was spilled at John Day, adults were delayed for several days and a substantial mortality of chinook and sockeye was recorded. The State of Oregon estimated that over 20,000 adult chinook were lost. (Studies estimate) that 6-60 percent of adult salmonids in the middle region of the Columbia River died...carcasses of adult salmon were found in the river when gas supersaturation reached 120 percent or higher.”

--Affidavit of Dr. Wesley Ebel, March 14, 1995

8. Spill at levels less than those proposed by NMFS can kill fish

“We have clear evidence that dissolved gas levels of 114 to 117 percent can kill large numbers of fish in a short time.”

--Dr. Larry Fidler, letter to the Oregon Dept. of Environmental Quality, February, 1995

9. NMFS own scientists agree the 110 percent standard is a maximum

“Effects above 110 percent are uncertain but in the direction of damage. More recent reviews suggest that more stringent levels of TDG are advisable for full protection.”

--NMFS Scientific Review Panel report on gas bubble disease, June 21-22, 1994

10. The Columbia/Snake ecosystem should not be put at additional risk.

“Between its mouth and the confluence of the Snake River, the Columbia occupies about 250,000 surface acres, which would be made lethal to an uncertain depth and for an uncertain period, depending on the resulting gas pressures. In this reach, there is an extremely extensive assemblage both of native fishes, introduced fishes, amphibians and invertebrates, whose ecology is complex and interrelated. The impacts of gas supersaturation on this biota are mostly unknown.”

--Dr. Gerald Bouck, in a letter to the Oregon Environmental Quality Commission, May 15, 1994

The 1994 Spill Program was called an “Experiment”

**Described below is the Fishery Agency knowledge
gained from this experiment**



(The NMFS did not evaluate the program)



The 1994 Spill Program Video Tape

I. Spill at Bonneville Dam, May 14, 1994, 120+ percent Dissolved Gas Level(DGL)

Spilling water at hydroelectric projects is not water over gates but water under the spill gates approximately 40 feet below water surface. The spill resulted in the presence of an abnormally high number of sea gulls feeding on dead and stunned juvenile salmon, steelhead, and other fish species. River turbulence caused by the spill created foam traveling over ten miles downstream.

II. Spill at The Dalles Dam, May 14, 1994, 120 percent DGL

Spill at The Dalles dam in all spillways is shown. Heavy turbulence is shown immediately downstream with sea gulls present diving for dead and stunned juvenile salmon almost one mile downstream at the bridge. The heavy turbulence in the spilling basin makes it difficult for adult salmon to locate fish ladder entrance located at near side (north) of project.

III. Spill at Dworshak Dam, July 18-19, 1994, 120 to 124 percent DGL

This hydroelectric project is located outside of Orofino, Idaho and is currently used for augmenting stream flows and reducing water temperatures in the Snake River. In order to serve this need a significant drawdown and flow of 25,000 cubic feet per second is possible and was the operation through the month of July, 1994. The project design only allows a maximum of 10,000 cfs through the turbines and, in the video, 15,000 cfs is spill through a mid structure outlet. It was estimated by a U.S. Fish and Wildlife Service hatchery manager that almost 100,000 Dworshak Reservoir Kokanee died as a result of this July spill. Although dissolved gas was not a problem here, the 1994 Dworshak spill is evidence that unforeseen negative side effects of spill can occur to aquatic species.

Prepared and Submitted by
Bruce Lovelin, CRA
April 7, 1995



City of Boardman

Town Square
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Boardman, OR 97818
Telephone (503) 481-9252

April 7, 1995

Oregon Department of Environmental Quality
2020 SW Fourth
Portland, Oregon 97232

Dear Sirs,

The City of Boardman would like to thank the DEQ for the opportunity to comment on the proposed granting of waivers to the Clean Water Act accommodating spill release of water in the Columbia River requested by the National Marine Fisheries Service. The City of Boardman obtains drinking water from the alluvial aquifer underlying the Columbia River. The City is one of only two drinking water systems in Oregon integrally tied to the Columbia River.

The City has concerns with the proposed plans that have been set forth by both the Pacific Northwest Power Planning Council and National Marine Fisheries Service. The concern arises from observations made during the "emergency fish spill" conducted in the months of May and June of 1994. Immediately prior to as well as during, this spill the City was conducting Microscopic Particulate Analysis sampling to determine whether the system would be subject to Groundwater Under the Direct Influence of Surface Water criteria set forth in the Safe Drinking Water Act. The City tested additional samples from the River in addition to the samples required from the Ranney Collector, which provided comparison of results to determine the filtration effectiveness of the aquifer. Laboratory analysis was by an EPA certified facility and the results from the sampling yielded disturbing trends discovered in the river system. Quantifiable microscopic organism changes were noted upon the completion of the "spill." Non-chlorophyll possessing micro-organisms, mostly associated with the benthic layer, completely disappeared after the spill. Additional data will be required to directly link the micro-organisms disappearance with the spill; however, the coincidence compells any scientist to suspect such a link. In addition it appears to be the only data of its type within the John Day pool and may be some of the only of its type in the entire Columbia River system.

One hypothesis which may explain the condition is the increased nitrogen levels that were encountered during the fish spill. At the same time as non-chlorophyll possessing micro-organisms were disappearing the chlorophyll possessing organisms were experiencing significant increases. Could it be that the nitrogen is used in the marine ecology as a food source that increases algae's growth? These are basic elemental food chain organisms that are being eliminated. If the elemental food chain is disturbed when will the higher food chain organisms are detrimentally impacted? This would include not only the listed species but the entire marine ecology and the surface and airborne animals that depend on the marine ecology.

Attached to this testimony are the results from the Microscopic Particulate Analysis sampling performed by the City. Testimony to both the Northwest Power Planning Council and the Interagency System Operation Review Team on the results and other concerns are also included.

In every experiment surrounding reservoir operations, "draw downs" and "spills," detrimental environmental impact has been noted.

In January of 1991 the John Day pool was drafted to an elevation of 261.5' above sea level which is 4 feet lower than normal operating pool elevation. During this "draw down" the hardness and alkalinity of the City's water doubled. While not a major health concern it is an indicator of relatively radical shifts in water quality.

In May and June of 1994, the changes in micro-organisms mentioned above were observed after the "fish spill."

In February of 1995, the pool was again drafted down to an elevation of 262.5' above sea level and 3 feet below normal operating pool level. During this "draw down" smolts being raised in the Irrigon Fish Hatchery, only 10 river miles upstream, contracted a disease that to date is still unidentified, killed nearly 2,100 fish in February alone, are still being felt and any fish that has contracted the disease will likely die as a result. This symptoms of the disease were identifiable in the hatchery; but, will it be in the marine ecosystem? If not, how many fish and other organisms died from the disease?

Each of these incidents is coincidental; however, when viewed collectively the repeated coincidental evidence should be disturbing.

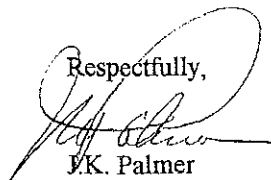
From the evidence listed above and evidence from other sources, that the City has researched, the obvious conclusion is that the full impact of actions effected on a complex ecosystem such as the Columbia River is far from fully understood. With this lack of understanding a considerable risk emerges when the ecosystem is operated for the ostensible benefit of a single species with ignorance or disregard for all other species.

The two basic principles of the Clean Water Act are "swimable" and "fishable" surface water bodies. It is the City's understanding that, in Oregon, the DEQ has the mandated responsibility of administering the rules and standards identified in the Clean Water Act. Standards set forth in the Clean Water Act have been developed on scientifically based studies pertaining to overall marine ecology and public health. It is the City's position that these standards should not be waived, further, they would not be should the applicant be a municipal wastewater treatment system or an industry requiring a discharge permit. Meeting the public health criteria set forth in the Clean Water Act and the Safe Drinking Water Act are the mandated responsibility of the City; those responsibilities are taken very seriously. It is fortunate that the result of the "fish spill," which from published data evidently killed many fish, did not generate public health violations as well. The City was not notified of the spill until after it was underway and would have had no way of protecting the health of the citizens should there have been any detrimental impacts. In the rush to act on saving endangered species, the basic tenets and principles of the Clean Water Act and Safe Drinking Water Act can not be ignored and standards "willfully" violated. Public health is certainly not the area in which a gamble may lead to a federal violation. Further, gambling with the entire marine ecosystem appears to be less than prudent and may be irresponsible.

Thank you for the opportunity to comment on this issue. If you should have any questions or comments about the nformation and testimony provided by the City please do not hesitate to contact us and and we can discuss them in greater detail.



Barry C. Beyeler
Public Works Director

Respectfully,


J.K. Palmer
City Manager



City of Boardman

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November 4, 1994

Columbia River System Operation Review
Interagency Team
P.O. Box 2988
Portland, Oregon 97208-2988

Dear Sirs,

The City of Boardman thanks the System Operation Review Interagency Team for the opportunity to comment on the Draft EIS for the Columbia River System Operation Review, DOE/EIS-0170. To this date this EIS seems to be the most comprehensive of the several proposals for Columbia River System operation brought on by listing of two salmon species on the endangered and threatened lists under the Endangered Species Act; however, there are some areas that are still in need of further consideration; and a few issues that appear to need initial consideration. The City will take this opportunity to identify some of the deficiencies.

The City of Boardman, it must be noted, has a unique perspective among Columbia River System interests, as Boardman is the only State of Oregon city that draws water for a public potable water system from the aquifer which lies beneath the Columbia River, and uses a highly effective natural filtration system. This is accomplished through the use of a Ranney Collector at river mile 268.5. This water system has consistently met or exceeded water quality criteria set forth in the Safe Drinking Water Act as administered by the US Environmental Protection Agency (EPA) and Oregon Health Division (OHD). This has been the case since the Collector was constructed in 1976. With the criteria set forth in the Safe Drinking Water Act (SDWA) any proposals for changing current operations which to this date have provided remarkably safe public water supplies, cause concerns about the relationship of any differing operations to overall water quality; and also how any of the proposed changes may decrease provision of safe potable water to the public.

In review of the draft EIS we have noted that water quality parameters identified in the EIS seem to center around only water temperature, dissolved gases, and sediment transport only as it relates to increase in turbidity. The data on Lead, Ammonia, and DDT levels provides for some insight into potential water quality and although these are relevant issues we will list some additional issues in need of study that should be evaluated:

1) National Pollution Discharge Elimination System (NPDES) permits have for the last 25 years allowed pollution loads into the Columbia, Snake and their tributaries. Prior to NPDES there were unregulated discharges to these waters. In Northeastern Oregon alone there around 50 NPDES permits today into the system. These are administered by the Oregon Department of Environmental Quality (DEQ) Eastern Region. These, which are upstream from the City of Boardman, are compounded even

more when the other Oregon drainage's contributing to the Columbia are considered. On the Snake drainage throughout Idaho and portions of Utah, Nevada, and Wyoming there are certainly other NPDES permits that are in effect administered by their respective states. The Columbia drainage will have numerous NPDES permits throughout the states of Washington and Montana and additional points of discharge in British Columbia, Canada. In addition there are numerous, unregulated by NPDES, industrial permits, and others such as the Hanford facilities on the Columbia in Washington which are separately regulated by the U. S. Department of Energy, and other non-point source pollution contributors in these drainage's. Although it is prominently mentioned in the draft being reviewed that some of these facilities will be impacted we do not see evidence of their being collectively reviewed which would better assess the overall impact to water quality conditions resulting due to decreases in flow leading to pollution dilution reduction increasing overall pollution concentrations.

2) These discharges have been historically allowed, occurring for decades. Pollutants from those discharges have been deposited into the sediment column. These sediments will be disturbed by any drawdown, (Section 4.2.1 Earth Resources [Drawdown] page 4-38), and/or increased flow conditions and in our estimation have not been adequately researched as to the overall effects. For instance it is mentioned that several pollutants have been noted in the sediments of the lower Snake River pools; however, no mention of this type of data for the Columbia is mentioned. In addition to the pollutants studied, lead, ammonia, and DDT, unstudied potential pollutants that may be found on the Columbia, below the confluence with the Snake, include radioactive isotopes from the Hanford Reservation and other polluting industries in the vicinity of the confluence. The EIS also mentions in this section that the most likely area affected by drawdown would be "The Snake River and the Columbia River immediately downstream of the confluence (McNary pool) should be the only reaches in the system affected by these operations.", (Section 4.2.1 Earth Resources [Drawdown] page 4-38). We submit that **disturbing the sediment column would place a portion into the stream, thus allowing any matter to reach further downstream users.**

Under the heading of Point Source Discharges, (page 4-47), it is stated "Determining the extent, frequency, and magnitude of this potential problem would require highly site specific and detailed analysis that is beyond the scope of the SOR investigation." This statement in itself is correct; however, the determination of point source discharge(s) should be viewed collectively and not just as individual sites. In addition this information should be gathered and analyzed collectively to be part of the data base used in the decision making process for operations and as such should be included in any subsequent SOR-type investigations.

The collective impacts from the Snake and the Columbia River are exacerbated by the drawdown effects being felt most directly, immediately downstream from the confluence of the Snake and Columbia. **With McNary dam in its current location the sediments from the Snake River that have been discharged over the years deposited in the areas above McNary dam as well as radioactive isotopes from the Hanford Reservation which have also been swept downstream to be deposited in the same locations. Should pool draw downs be performed we should know the precise contaminants (as they may be toxic) that are entrained in the sediment column which will be disturbed.** This will allow scientific assessment of the impacts not only to the endangered species in question but to all species including the *human populations* along the Columbia River downstream from where these pollutants will be re-released into the water column and potentially the air column as well from a current dormant state. This includes all populations with any form of contact.

3) Ground water discharges to the Columbia and Snake rivers will alter as pool drawdown options are pursued. These changes may be in the form of increased levels of naturally occurring constituents, or they may also be seen from manmade contaminants as a result of land use activities that take place within the Columbia Drainage. Shallower aquifer depletion will increase, and this may decrease time of travel from river-bank locations to discharge points into the river. The potential pollution

concentrations appear to have been overlooked and should be considered and evaluated in the overall water quality conditions to assess impacts on both people and fish .

4) Pool draw downs will also effect groundwater in other ways. People are currently using groundwater as a source of drinking water. As groundwater levels decline these people will be forced to find alternative sources of water, which may be unavailable. Where they are available they will put additional pressures on already limited resources. Others will be forced into obtaining water from the nearest public water system, should one be available and have the resources to provide. These conditions will increase the population base affected by the public health concerns that are being expressed. In addition many public water systems will not be able to provide this service due to restrictions placed upon them by the regulatory agencies in charge of the available water resources.

5) Under the heading of *Rearing Habitat* on page 4-58; "The natural river, drawdown, and combination alternatives would reduce the available food supply for the affected stocks in two primary ways. One would be by **dewatering the shallow areas** where most of the benthic food organisms originate (Bennett, 1991). The second would be by **increasing flushing, thereby reducing the zooplankton** that are another important food source for rearing and migrating salmon and steelhead. Food sources for Snake River fall Chinook may already be in short supply in the reservoirs (Curet, 1993)." Microscopic Particulate Analysis (MPA) sampling performed by the City of Boardman has shown **significant decreases in non-chlorophyll possessing micro-organisms in the Columbia at river mile 268.5 on the Columbia**. Many of these organisms fall under the benthic food supply category mentioned on page 4-57 under the heading of *Rearing Habitat*. These samples were performed as required by the EPA and OHD in response to the Groundwater Under Direct Influence of Surface Water criteria of the Safe Drinking Water Act. The trend shown from the results of sampling is disturbing although there is not enough data to adequately assess the cause of the decrease. Attached to this document is a report outlining the results of the MPA sampling that was performed. This report was delivered to the Northwest Power Planning Council in a public hearing in Hermiston, Oregon on October 28, 1994. It was actually stated during that hearing, by the Council member conducting the hearing, that this is an area that in is need of much additional study to determine the overall marine ecology impacts and their direct impact upon the re-establishing of the salmonid populations.

6) It appears that there **may be a lack of coordination** with the state regulatory agencies in determining some of the impacts listed above, presuming that they have been included; however, with the primary agency directly involved to date being Department of Fish and Wildlife, others may be depending upon that agency to voice their concerns. It must be remembered that **each state regulatory agency**, and each respective human health area affected **will have responsibilities for implementation of any plans** adopted. This will require a review that will encompass the other mandates for which that agency is responsible. Agencies such as DEQ, OHD, and others in Oregon are staffed only to meet current mandated responsibilities; this additional burden may serve to decrease the overall effectiveness of any program and could lead to strain on monitoring the overall public health risk for the State's population .

7) Air quality concerns return to the pollutant discharge sediment deposition position stated earlier in this document. Again, there is no real data on chemical concentrations, in the lower Columbia River pools below the confluence with the Snake, in sediment columns that will be disturbed, (page 4-51). This is particularly so, with the only data available being at Lower Granite and Grand Coulee pools. The statement that these would be representative of all pools is questionable as the collective effects may be much higher in the lower Columbia pools below the confluence of the Columbia and Snake Rivers. In addition the lower Columbia River regions are arid and susceptible to wind blown movement of exposed sediments both natural and man-made. **Until sediment column contaminants are identified, appropriate mitigation examined, and measures developed to preclude further contamination, the overall potential health effects can not be appropriately determined, much less corrected.**

8) Contradictions appear On page 4-57. Under the heading of Flows and Water Velocities statements lead to questioning of the validity of computer modeling used. It is stated that "Conflicting results concerning the effects of flow on fall Chinook survival from the mid-Columbia were recently presented by Hilborn et al. (1993) and Norman (1992 as cited in Cada et al., 1993). Hilborn shows significant **positive effects** and Norman showing **negative effects** on survival of adult returns of discharge during juvenile out migration." The following paragraph indicates that **this information is incorporated into the computer models**. The conflicting scientific reports begs the question of which information was used in the computer model and how does that effect validity of the model. It would appear that the initial calibration of the model performed when conflicting reports are used would be difficult and subjective. If both sets of data were entered the contradicting variables should produce ranges hard-pressed to be valid in uncertainty analysis.

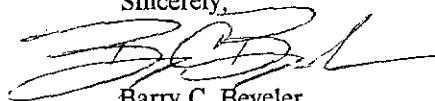
As a practical concern, it appears that **flow-effects are used in many of the other agency and council hearings** related to salmon as alternatives of choice, and whether positive effects or negative effects are stressed depends upon which end-result the particular testimony would like to see. **This issue is in need of resolution scientifically, and agreed upon by whomever is actually in charge of, and willing to take responsibility for, these proceedings.**

Closing:

The City of Boardman has many concerns on the potential direction of Columbia River operations. These concerns center around the protection of public health which does not appear to be priority concern in this EIS, although this is the first list of proposals that has considered public health as a concern. The City of Boardman applauds the Corps of Engineers, Bureau of Reclamation, and Bonneville Power Administration for recognizing public health as being a part of any plan that may be adopted. Although the City stands ready to help in recovery efforts for salmon populations within the Columbia drainage we feel that appropriate science, *which includes assessment of public health concerns*, should define the direction that is taken in the course of recovery plans. Without the aid of appropriate science we are doomed to fail in the attempt as decisions are made and implemented that have overall negative impacts not only on the fish but on the human population as well.

Thank you for the opportunity for comment and if you should have any questions please contact me and we can discuss them in greater detail.

Sincerely,



Barry C. Beyeler
Public Works Director

CITY of BOARDMAN
PUBLIC WORKS DEPARTMENT

**Microscopic Particulate Analysis Results
and
Potential Relationship to River Operations**

October 1994

The City of Boardman in response to the Ground Water Under Direct Influence of Surface Water (GWUDI) criteria set forth in the Safe Drinking Water Act (SDWA) has performed a series of Microscopic Particulate Analyses (MPA) over the past year. The laboratory analysis was required to be done on a nationally accredited laboratory of which 4 existed in the United States. Four MPA's were performed starting on September 7, 1993 and completed on September 13, 1994. The timing of these samples was determined to meet criteria under the SDWA and not to assess Columbia River operations; however, the results point out several questions on river operations that need to be addressed. Of major significance is that the dates coincided with the "fish flush", and that none of this data was collected by any other "involved" agency.

As required by the Federal Environmental Protection Agency (EPA), the City performed samples from the Columbia River on the dates of September 7, 1993, June 14, 1994, August 2, 1994, and September 13, 1994. The organisms recorded in the MPA are "*bio-indicator organisms*" for determining whether a ground water source is influenced by surface water. The results of these samples are included in Attachment "A". These results show that in the first two samples performed (9/7/93 and 6/14/94) that, among particulates for which testing was required, a significant number of certain types of micro-organisms such as Ciliates, Colorless Flagellates, and Other Arthropods were found in the "raw" river water. Brief definitions for each of the micro-organism types, provided by CHDiagnostic & Consulting Service, Inc. in Loveland, Colorado is as follows:

Ciliates: These free-living protozoa are extremely common. Ciliates are distinguished from other protozoa by the presence of a macronucleus. Like ameba they feed on bacteria, algae, small metazoa, other protozoa and extraneous debris.

Colorless Flagellates: Although many flagellates are phototrophic, there are many colorless species that grow in the absence of light if sufficient dissolved nutrients are available. They are common in surface water and can be removed by filtration. These protozoa have broad feeding and nutritional acquisition capabilities (mixotrophic). Flagellates possessing chlorophyll are included in the algae category.

Other Arthropods: There are a large number of organisms, all with jointed appendages, in the phylum Arthropoda. This category lists the arthropods which are not crustaceans or which are identifiable only to phylum due to the condition of the organism. Chironomid (insect) larvae and eggs are commonly reported in surface waters as are arthropod pieces. Seen less frequently are other insects, water mites, and seed ticks. *This category is used only for surface water Microscopic Particulate Analysis.*

The last two samples taken for analysis on the dates of August 2, 1994 and September 13, 1994 show that none of these organisms were found in the samples of the raw river. The changes in the numbers of organisms found are certainly curious in nature and may signal significant changes in the level of micro-

organisms available as a first link in the food chain. These organisms fluctuate in population based on water conditions; however, population fluctuations usually do not include total absence of these organisms.

Upon compiling a report for the Oregon Health Division on the sampling performed on August 2, 1994 it was discovered that these curiosities existed and research began toward possible explanations to the change in number of organisms found. The search began with the City requesting from the Corps of Engineers information on several parameters that may have a causal relationship to the results derived. A copy of the letter of request is attached as *Attachment "B"*.

The City has been reviewing the data received from the Corps and preliminary results seem to indicate that the flow rates of the river may have a causal relationship that can explain the change in the results; however, the sample data from the City is limited, but points definitely to the fact that additional data points are needed to adequately assess this issue. In *Attachments "C" & "D"* the City has plotted the average KCFS rate at both John Day and McNary reservoirs from December 1, 1993 through September 7, 1994. The dates of the MPA samples performed on June 14, 1994 and August 2, 1994 are represented by the vertical lines to the right of the graph. The June 2, 1994 sample, during the latter stages of the "Emergency Fish Flush" still shows comparative numbers of the micro-organisms in question found in the September 7, 1993 sample; however, by August 2, 1994 the flow rates have significantly decreased and the micro-organisms in question have disappeared. This may not be a true causal effect; however, at this time it is likely the only micro-organism data that has been assessed and the results beg for additional study to determine the long term effects that these increased flow rates may have on the micro-organisms that comprise elemental links in the biological food chain.

Additionally John Day pool elevations and KCFS flow rates for the week preceding each MPA sample at John Day and McNary dams were reviewed for potential information on the cause for changes of the sample results. *Attachments "E", "F", and "G"* show the results of this review. The week prior to the August 2, 1994 sample the flow rates between the John Day and McNary reservoirs do not seem to be in harmony as is found prior to the other sample dates reviewed. This may be a causal relationship; however, once again more data is needed to assess these potential impacts.

The dissolved gas levels which we heard so much about during the "Emergency Fish Flush" may also have a causal effect on the overall increase in the amount of algae that were seen in the results from the MPA's performed in response to EPA requirements. Review of the dissolved nitrogen levels has yet to be completed due to time constraints and level of data entry required (putting Corps data into a format that our computer can chart and graph). This review will continue as time allows.

Conclusions:

The lack of data prevents any true scientific conclusion to the reason that MPA sample results from the Columbia River should show such a drastic decline in some micro-organisms. This indicates that additional information is needed. The results of the MPA's performed as required by EPA point out an area that should be evaluated by the agencies that have charge of developing salmon recovery plans. With the potential changes shown in micro-organisms that are in the elemental links of the food chain it would seem that this information would be of significant importance to any plan concerning salmon survival. This type of information would also seem to be the type of information that these agencies should have been assessing to determine the impacts of any proposed plans; however, there has been no indication to the City that this is the case and the results from the Federally accredited laboratory in Loveland that analyzed the MPA sampling for an entirely different purpose, the protection of public health required by the Safe Drinking Water Act, may be the only data of this type available.

CITY of BOARDMAN
PUBLIC WORKS DEPARTMENT

Columbia River Microscopic Particulate Analyses'

Performed by Boardman Public Works Department from 9/93 through 9/94

<i>Parameter</i>	<i>9/7/93</i>	<i>6/14/94</i>	<i>8/2/94</i>	<i>9/13/94</i>
Gallons in sample	437	176	580	480
Centrifugate (sediment)	5.1 mL	28.4 mL	6.25 mL	7.8 mL
Non-diatomaceous Algae	50,000,000	600,000,000	300,000,000	400,000,000
Diatoms	500,000,000	800,000,000	200,000,000	300,000,000
Plant Debris	1	0	0	0
Rotifers	100,000	60,000	20,000	30,000
Nematodes	2	0	0	0
Pollen	0	0	0	0
Amoebae	0	0	0	0
Ciliates	20,000	100,000	0	0
Colorless Flagellates	200,000	100,000	0	0
Crustaceans	2	0	0	0
Other Arthropods	20,000	30,000	0	0
Other	0	0	0	0
<i>Giardia cysts</i>	0	90.9*	77.5*	41.3*
<i>Cryptosporidium oocysts</i>	N/A	181.8*	0	82.6*

All results listed in number per 100 gallons unless otherwise listed.

* = *Presumptive count per 100 L*



City of Boardman

Town Square
P.O. Box 229
Boardman, OR 97818
Telephone (503) 481-9252

August 31, 1994

To: Phil Grubaugh, U.S. Army Corps of Engineers

From: Barry Beyeler, City of Boardman

Subject: Request for information on river operations for assessment of impacts on City of Boardman Public Water System.

As per our phone conversation of August 30, 1994, concerning water condition changes of the Columbia River in the John Day pool at Boardman, I am forwarding a memo written to Dennis Nelson of the Oregon State Health Division for your files. As part of the Groundwater Under Direct Influence (GWDUI) rules associated with the Safe Drinking Water Act (SDWA) the City has been performing a series of Microscopic Particulate Analyses (MPA's) to determine the relative risk to public health from surface water influence. In previous sampling these samples have shown rather consistent numbers from both the river and collector samples that had been performed. In the last sample performed on August 2, 1994 significant changes were noted. The memo to Dennis Nelson lays out some of the potential reasons for the sample results of which the operations of the Columbia River are one potential explanation for the changes.

To further assess the potential impacts that the river operations may have on these results I would like to request from the Corps the following information. This information *may* help in either proving or disproving cause and effect relationships associated with pool drawdowns or operations.

1) Exact dates and durations of "Emergency Fish Flush" operations ordered by Judge Malcom Marsh for the John Day Dam and McNary Dam. Included in this I would also like information on any additional flushing times after the proposed June 22, 1994 end of flushing operations.

2) Recorded dissolved Nitrogen levels below both John Day and McNary Dams from September 1, 1993 to present.

3) Pool elevations for the John Day pool from September 1, 1993 to present. A daily reading, at the same time each day, would suffice with the exception of the weeks of September 1 -7, 1993, June 8-14, 1994, and July 27 - August 2, 1994. For these dates a more finite breakdown may be helpful for review of potential cause & effect criteria associated with the City's MPA sampling and analysis.

4) Flow rates in cfs/day from September 1, 1993 to present for John Day and McNary dams. More finite information, such as cfs readings hourly, for the dates mentioned in #3 would be helpful as these may help in determining the impacts during the sampling that has been performed by the City.

5) Any other data on river operations that may show any potential cause and effect relationships with the sampling and analysis performed by the City.

Any information that we generate as a result of this effort will be forwarded to the Corp for their use. If you should have any questions or concerns please contact me and we can discuss them further.

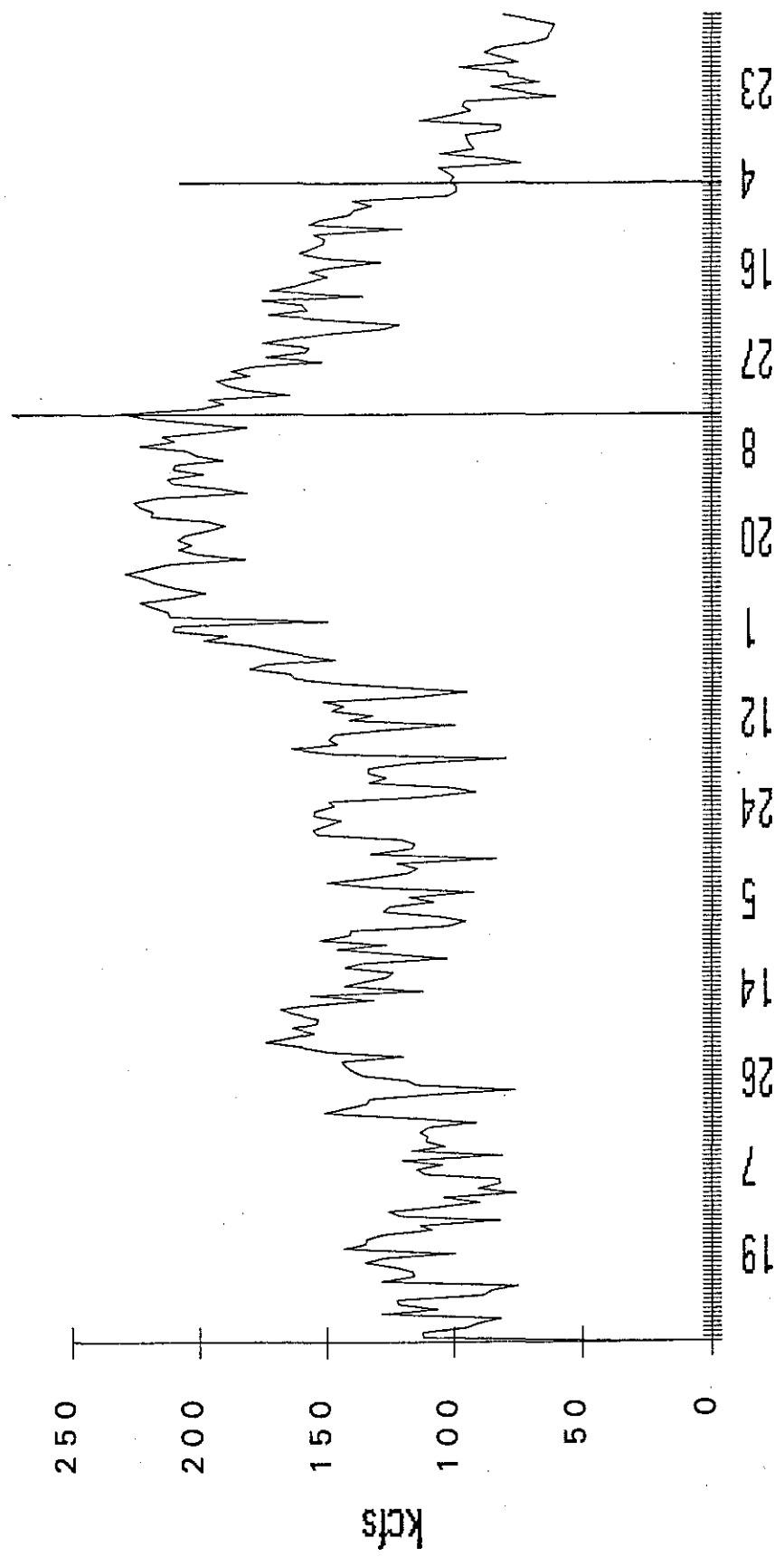
Sincerely,

A handwritten signature in black ink, appearing to read "Barry G. Beyeler".

Barry G. Beyeler

ATTACHMENT "C"

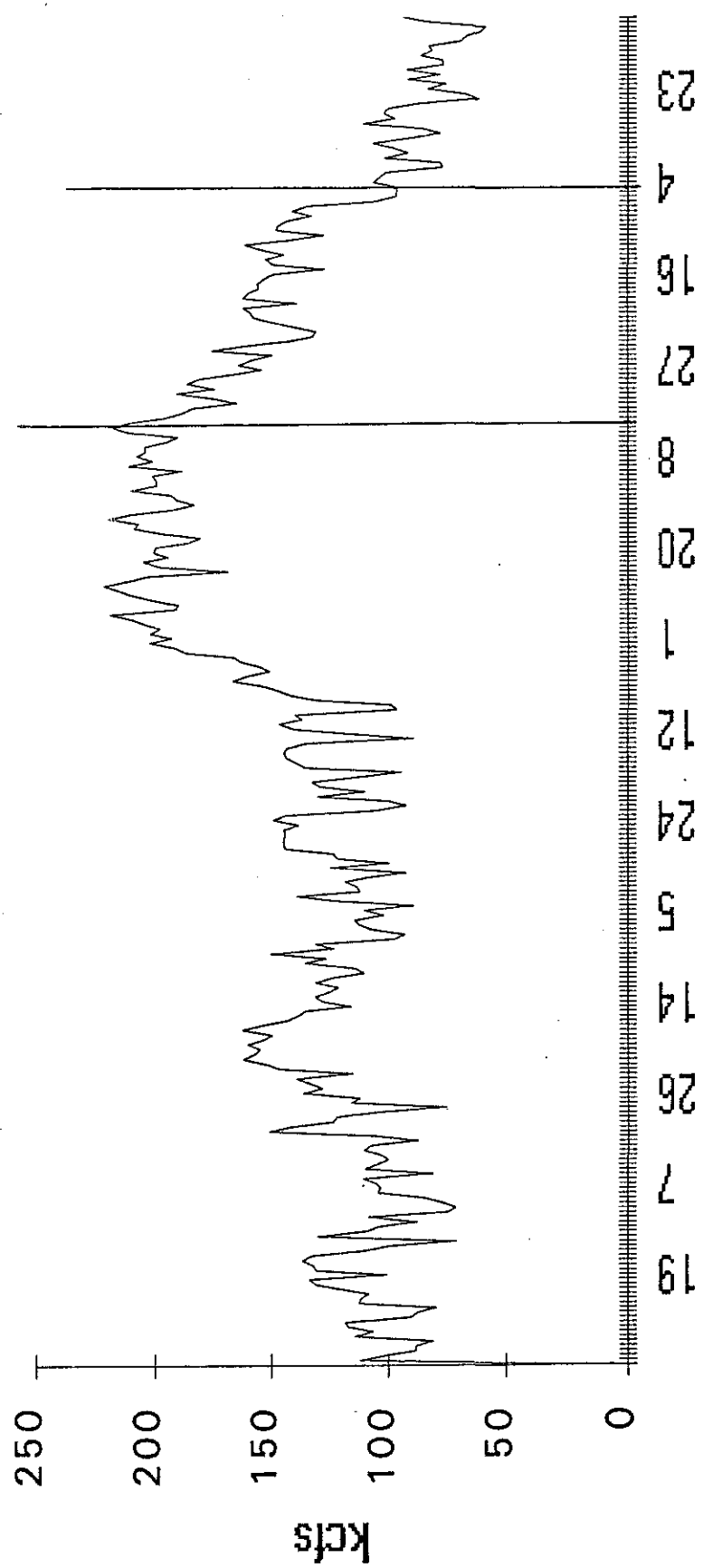
John Day kcfs Avg.



12-1-93 to 9-7-94

ATTACHMENT "D"

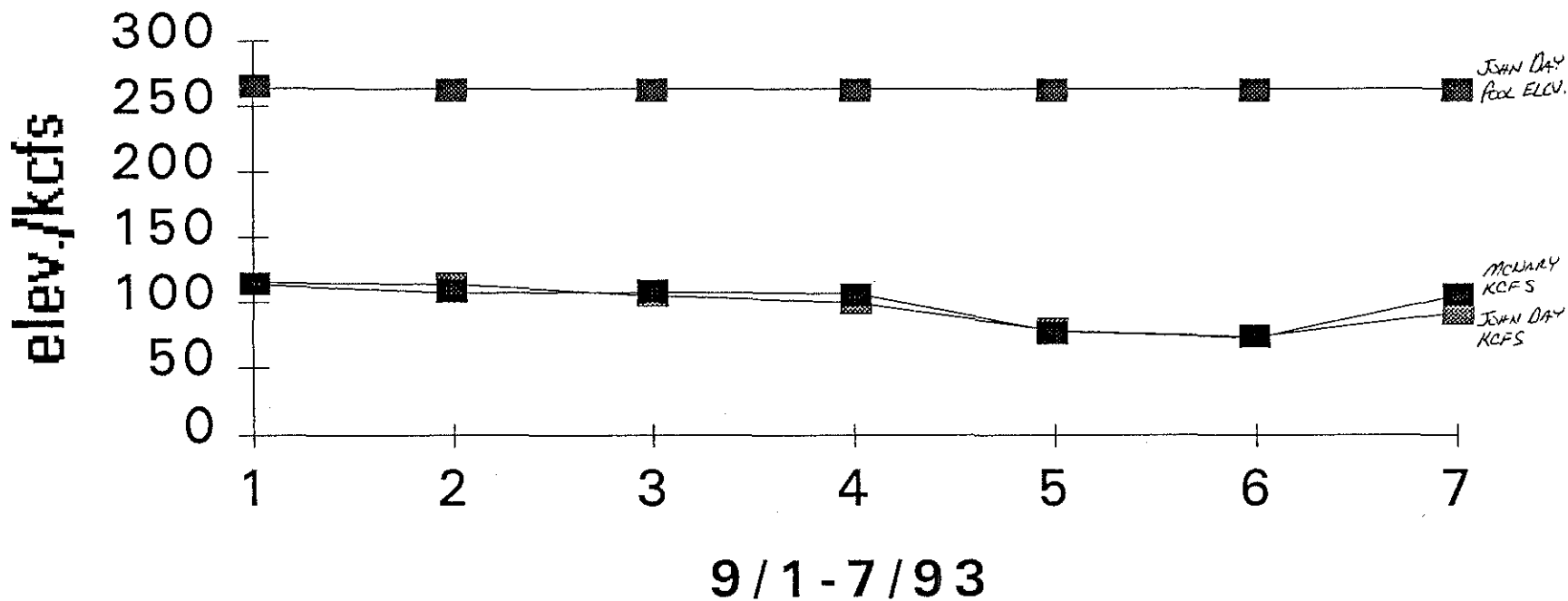
McNary kcfs Avg.



12-1-93 to 9-7-94

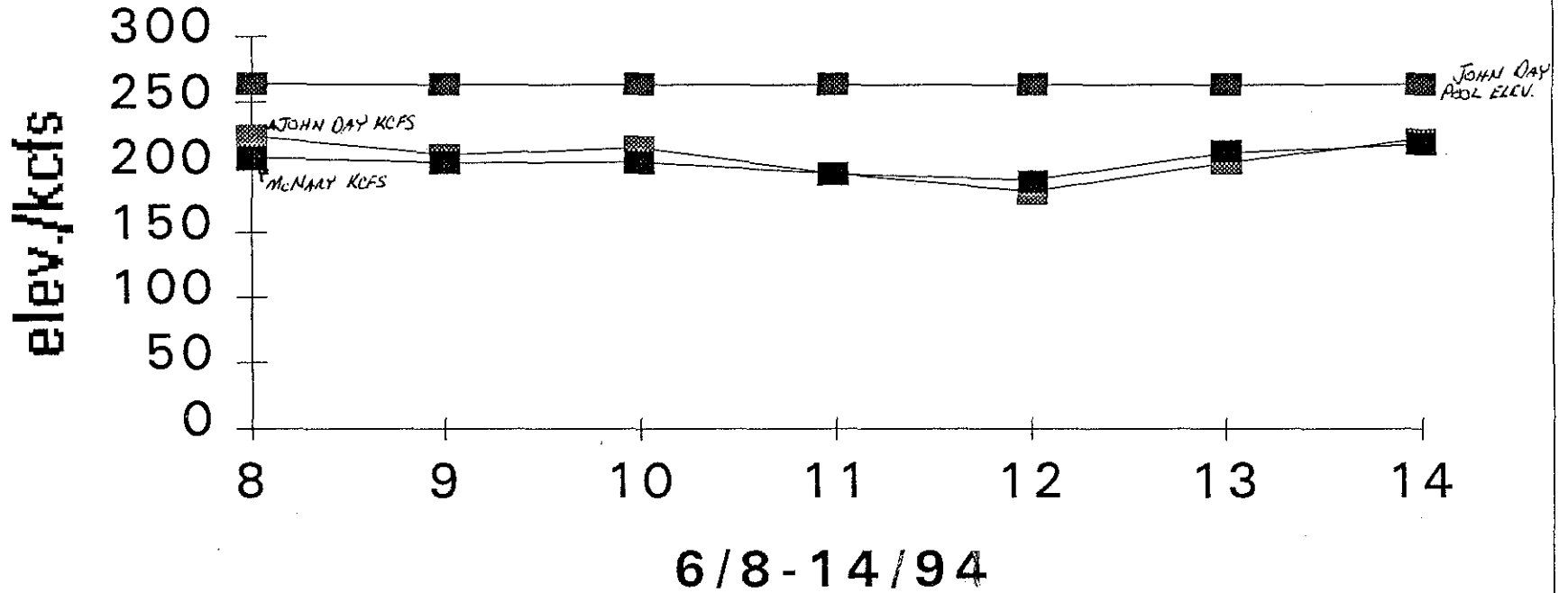
Attachment "E"

Week prior to 9/7/93 MPA sample



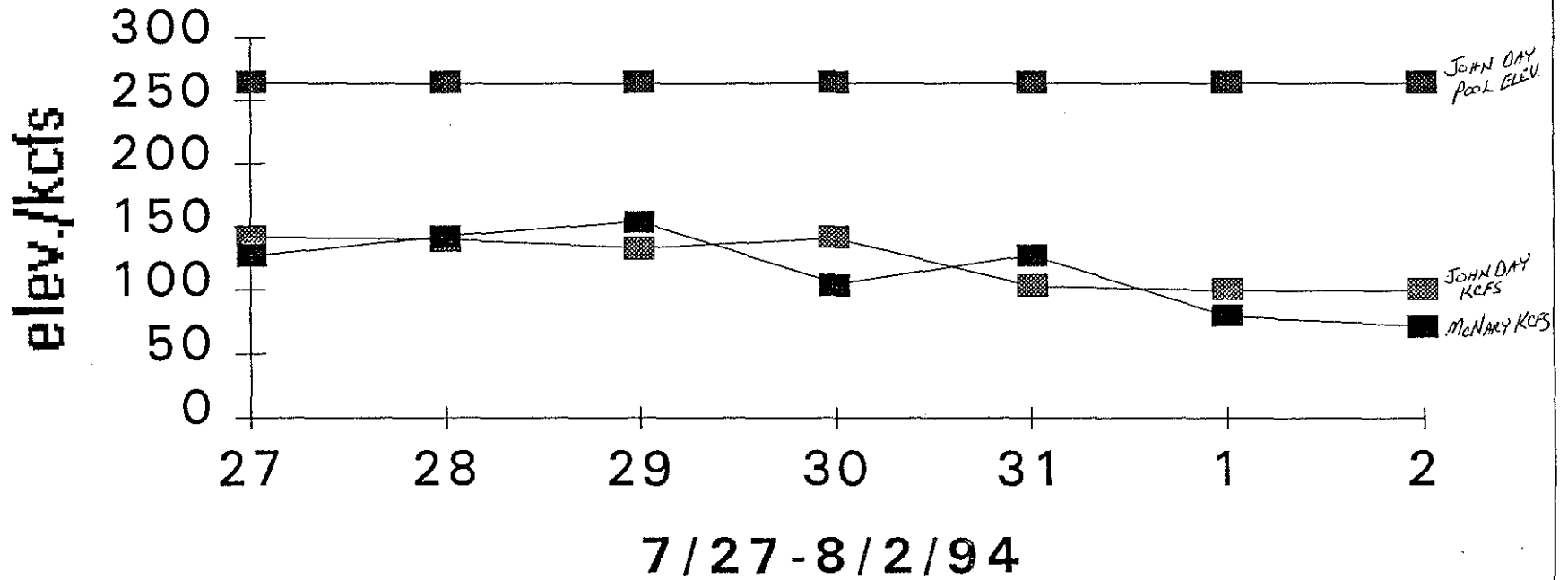
Attachment "F"

Week prior to 6/14/94 MPA
sample



Attachment "G"

Week prior to 9/7/93 MPA
sample



CITY of BOARDMAN
PUBLIC WORKS DEPARTMENT

Columbia River Microscopic Particulate Analyses'

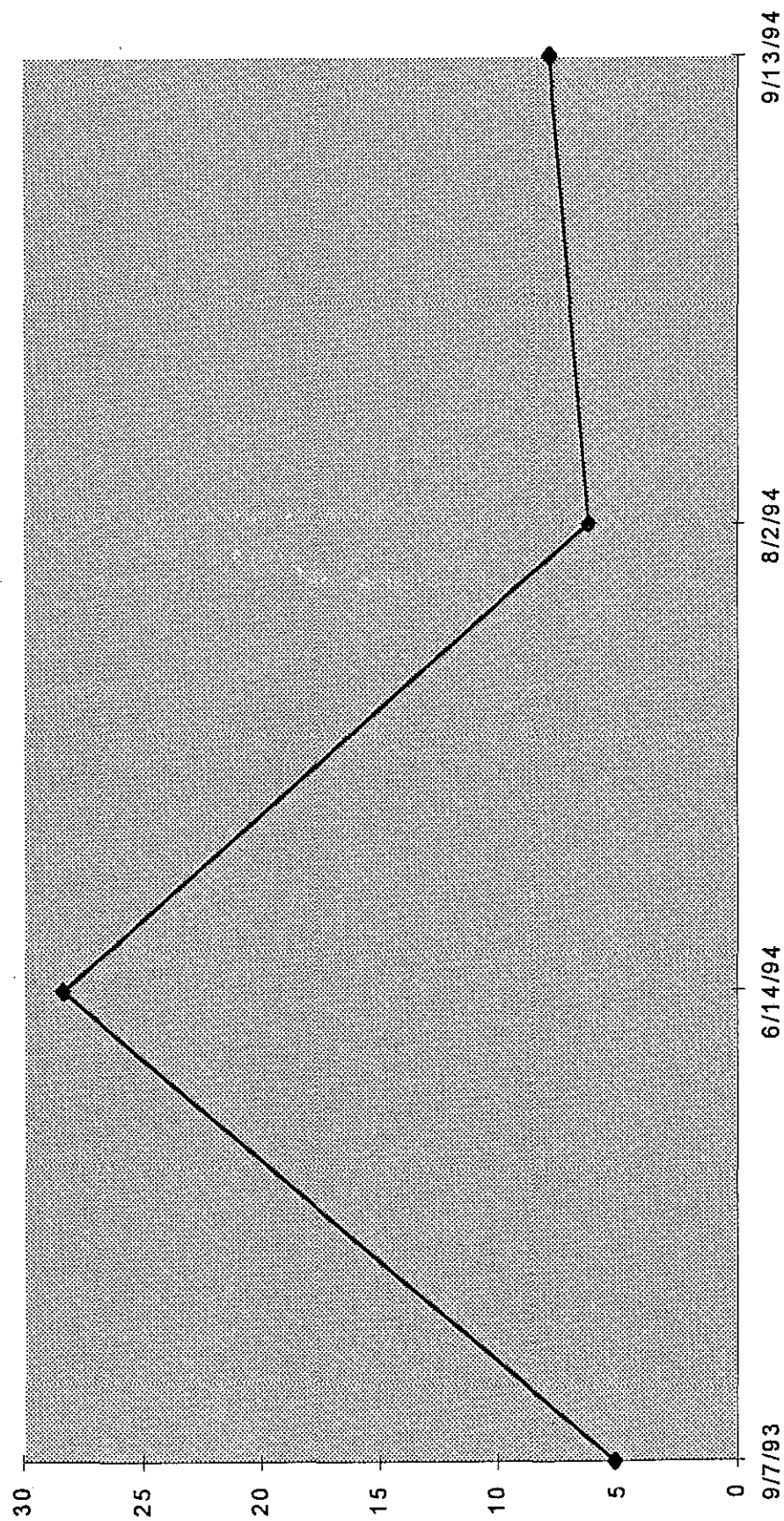
Performed by Boardman Public Works Department from 9/93 through 9/94

<i>Parameter</i>	<i>9/7/93</i>	<i>6/14/94</i>	<i>8/2/94</i>	<i>9/13/94</i>
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Diatoms	500,000,000	800,000,000	200,000,000	300,000,000
Plant Debris	1	0	0	0
Rotifers	100,000	60,000	20,000	30,000
Nematodes	2	0	0	0
Pollen	0	0	0	0
Amoebae	0	0	0	0
Ciliates	20,000	100,000	0	0
Colorless Flagellates	200,000	100,000	0	0
Crustaceans	2	0	0	0
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Other	0	0	0	0
<i>Giardia cysts</i>	<i>0</i>	<i>90.9*</i>	<i>77.5*</i>	<i>41.3*</i>
<i>Cryptosporidium oocysts</i>	<i>N/A</i>	<i>181.8*</i>	<i>0</i>	<i>82.6*</i>

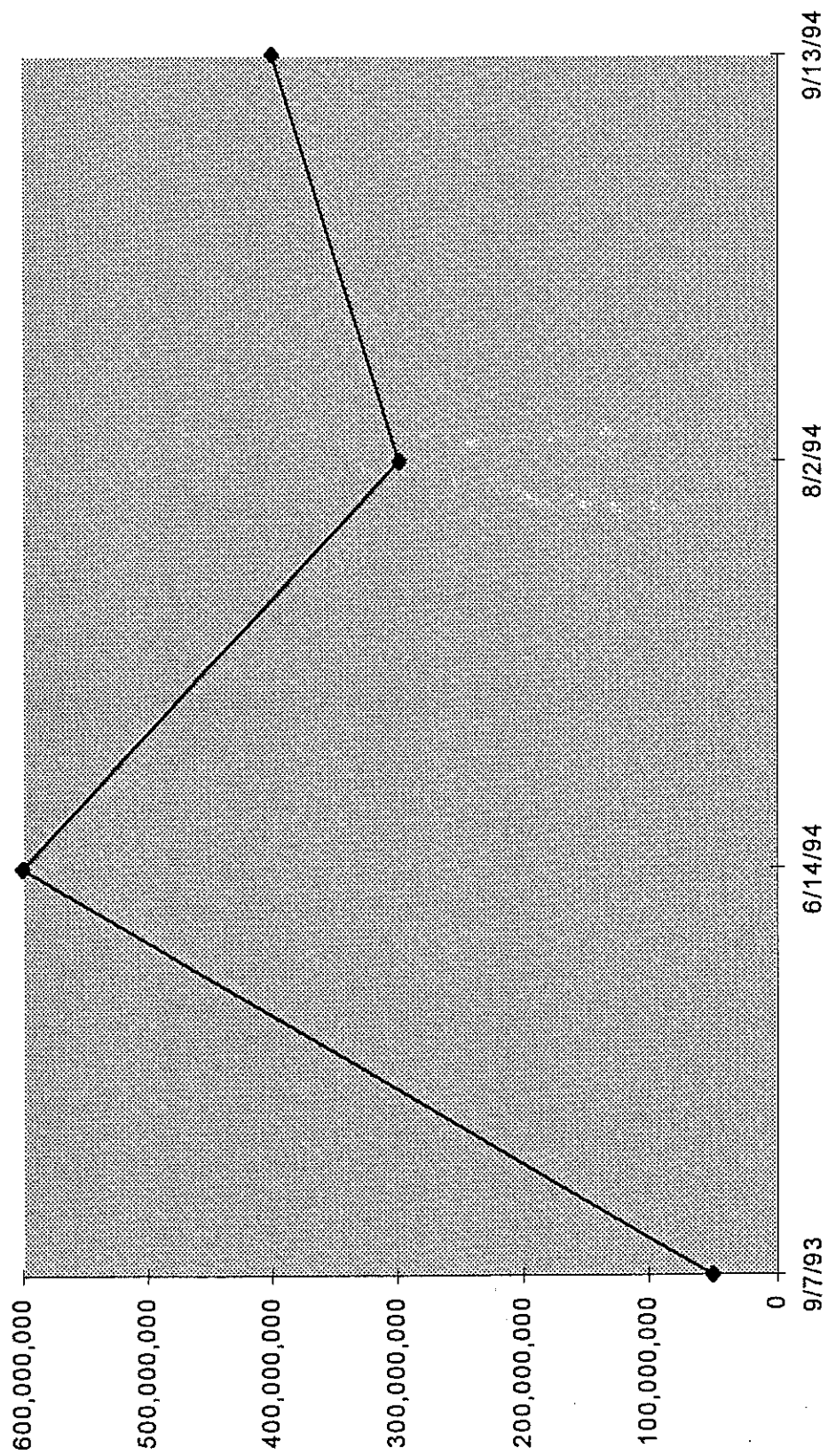
All results listed in number per 100 gallons unless otherwise listed.

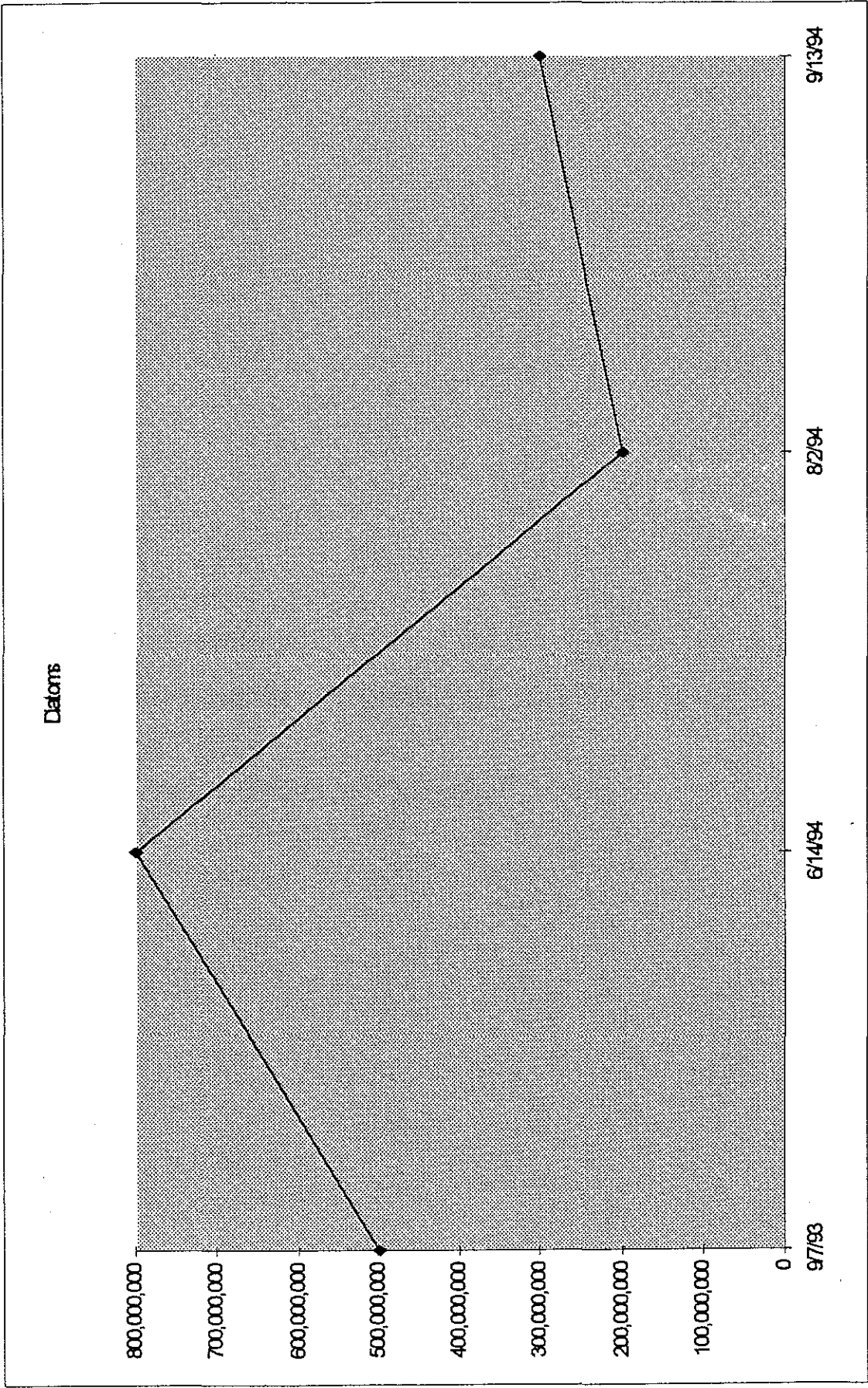
* = *Presumptive count per 100 L*

Centrifugate (sediment)

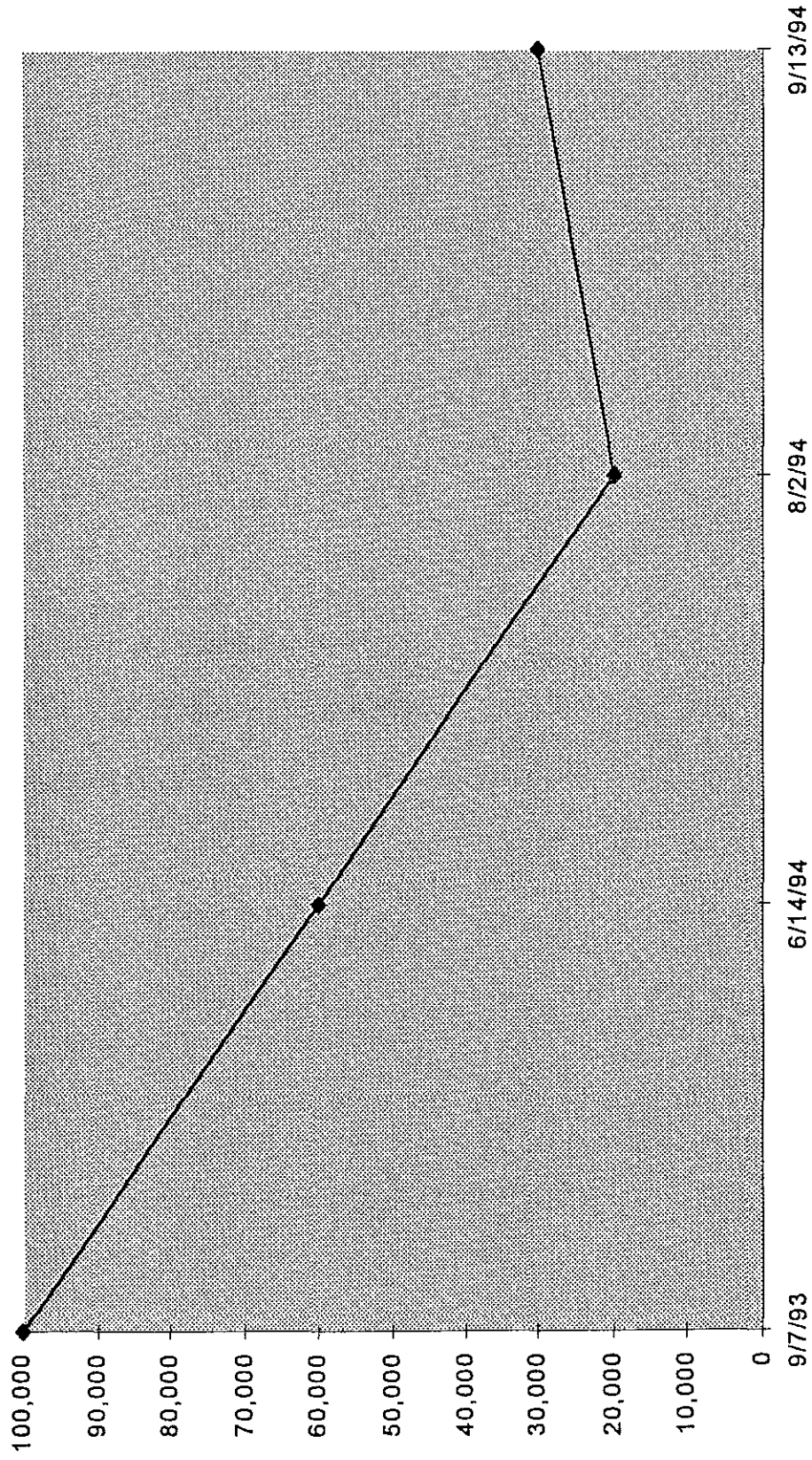


Non-diatamaceous Algae

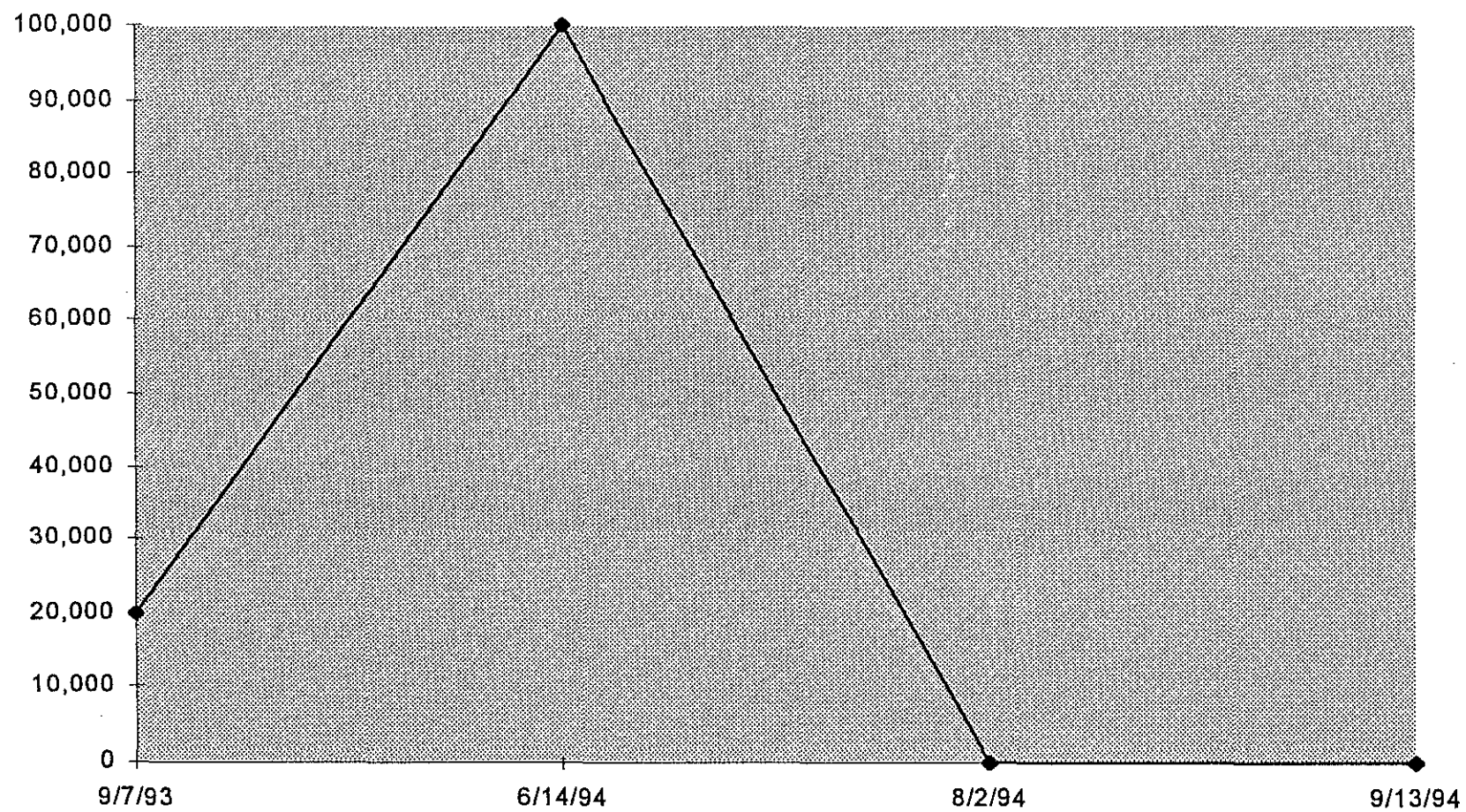




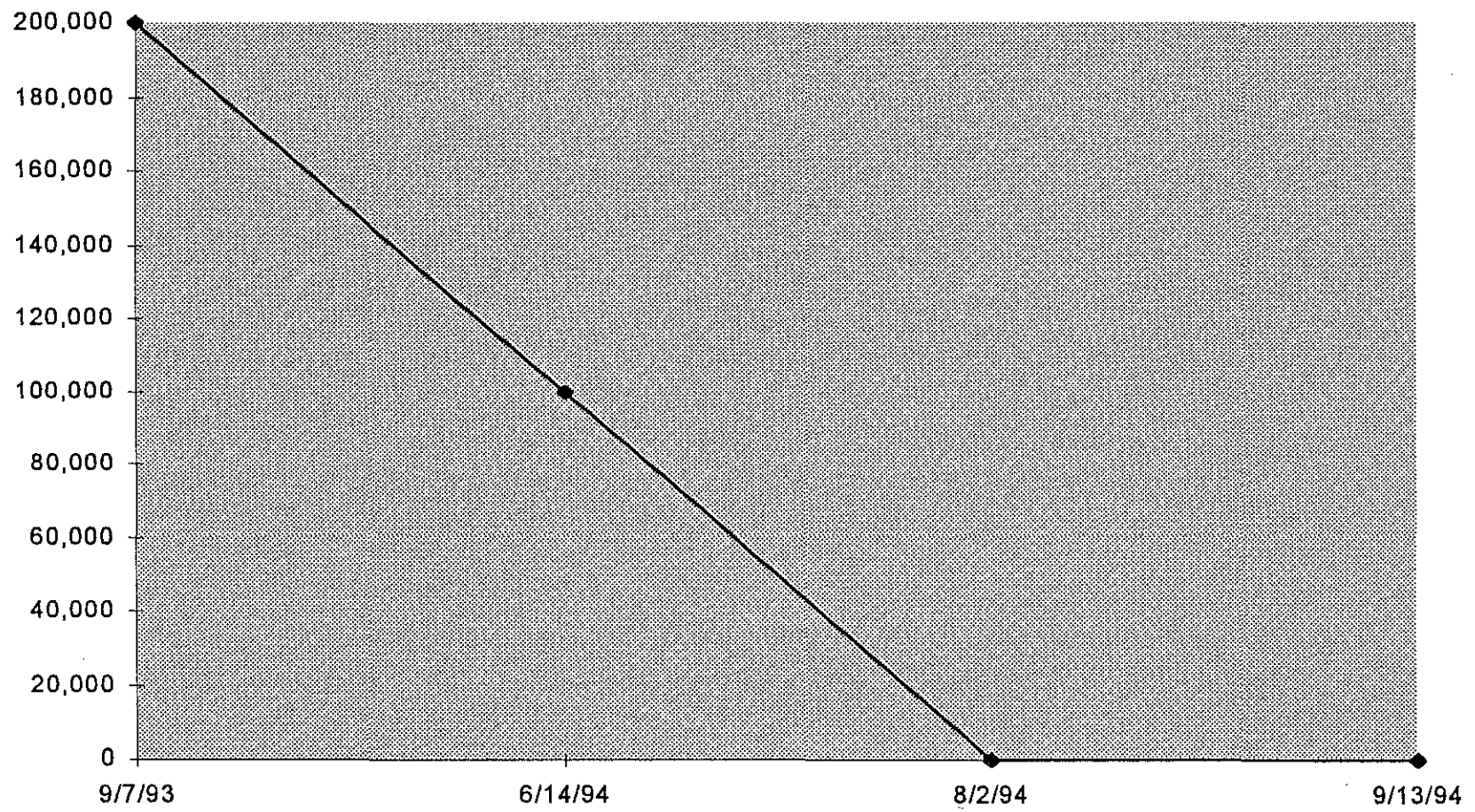
Rotifers



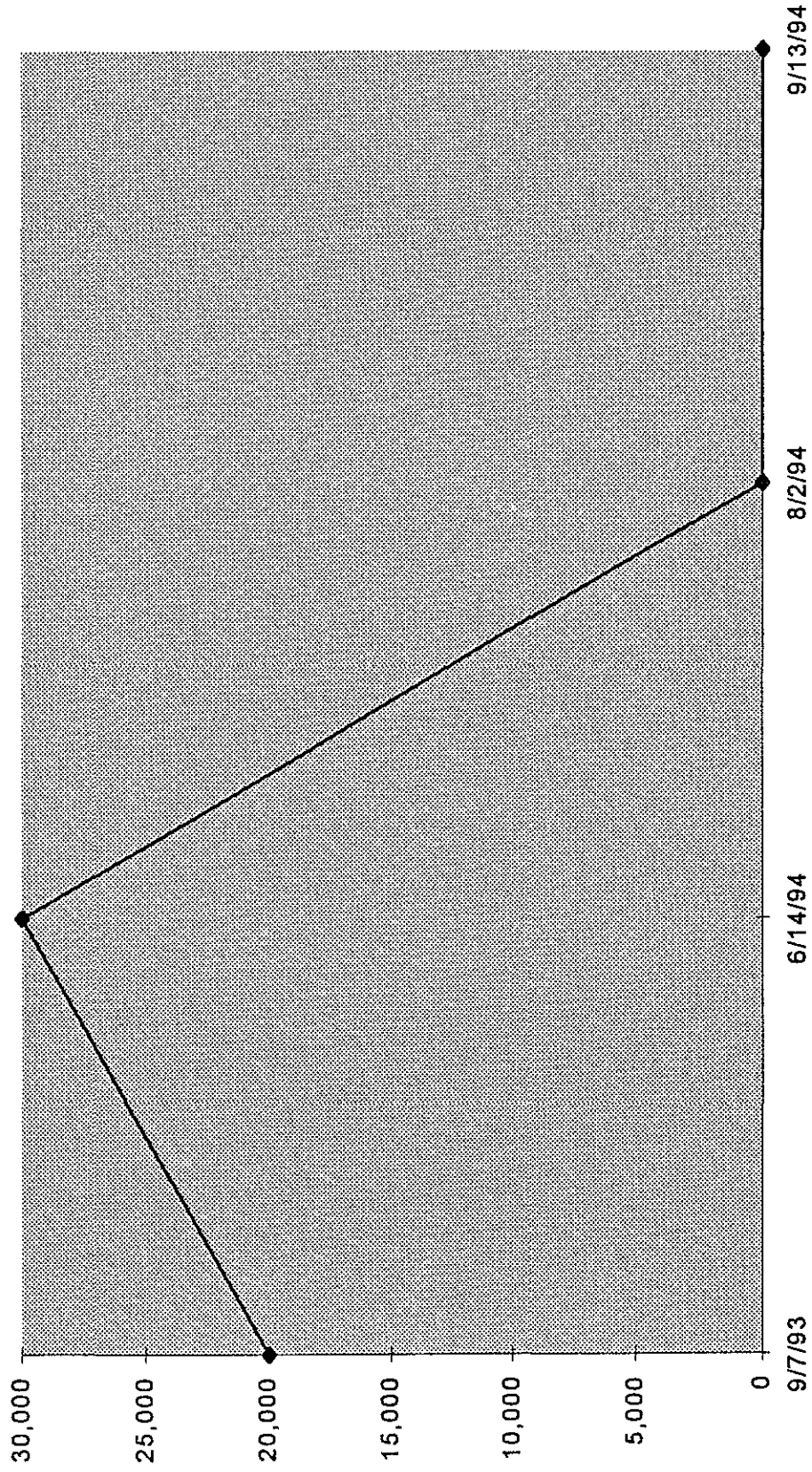
Ciliates



Colorless Flagellates



Other Arthropods



CHDiagnostic & Consulting Service, Inc.
1966 W. 15th, #4, Loveland, CO 80538
(303) 667-9789

Brief Description of Bio-indicator Organisms

Giardia - *Giardia* is a pathogenic protozoan that reproduces in the intestinal tract of mammals including humans. Hosts shed resistant cysts in their feces which can then contaminate the watershed. *Giardia* is common in surface waters and should be removed by filtration and/or inactivated by disinfection for potable water. If water is not properly treated, cysts can be present in finished drinking water and ingested by humans causing diarrhea or gastroenteritis of varying severity. Several waterborne outbreaks have been attributed to *Giardia*.

Coccidia - *Coccidia* are a subclass of intracellular parasites which occur primarily in vertebrates. This category covers mammalian, avian and fish coccidia which infect various tissues and organs, including the intestinal tract (e.g. *Cryptosporidium*). *Cryptosporidium* oocysts are commonly found in surface waters and are very resistant to disinfection; therefore, maintenance of an efficient filtration system is essential for their removal. Because of its' small size, 4-6 μm , the fluorescent antibody technique is used for *Cryptosporidium* detection.

"Presumptive" *Giardia* cysts and/or *Cryptosporidium* oocysts are objects that have fluoresced brilliant apple-green, are the proper size and shape, and show no atypical characteristics when viewed by contrast microscopy. "Presumptive" cysts or oocysts may or may not have internal morphology for "confirmed" identification.

"Confirmed" *Giardia* cysts and/or *Cryptosporidium* oocysts are a subset of the "presumptive" classification. These cysts and/or oocysts have internal morphology that confirms they are *Giardia* and/or *Cryptosporidium*.

Diatoms - *Diatoms* are a group of algae which are distinctive because their cell wall is composed of silica. There are numerous species found in surface waters. They contain chlorophyll and need sunlight to live and reproduce. The size of these organisms is dependent on the nutritional quality of the water. Some species are known to be nuisance organisms because they clog filtration systems. A preponderance of 1 or 2 species in the finished water indicates possible growth in the filter beds rather than passing through the system. When found consistently in groundwater, they indicate surface water influence.

Nondiatomaceous (Other) Algae - This category is comprised of a large number of filamentous, colonial, and unicellular species of algae. Like diatoms, chlorophyll-bearing algae require sunlight for their metabolism. For this reason, their repeated presence in a groundwater source indicates direct surface water influence. Surface water contains more than 10,000 known species with about 100 different species being commonly found. Diversity, abundance, and organism size are dependent on available nutrients, water temperature, time of year, and other environmental and biological factors. Some species are known to be nuisance organisms causing taste and odor problems. Some cause filters to clog and add color to the water. Some species will grow in the filtration system and be present in the effluent. This can usually be detected because there is an overall decrease in the variety of species and an increase of only a few species between the raw and finished water.

Rotifers - A major taxonomic group with over 2,500 species, of which more than 2,375 species are restricted to fresh waters. They are associated with a variety of habitats including lakes, puddles, damp soil, vegetable debris, and the interstices between sand grains of beaches. They are also found associated with mosses which can often be found in or around groundwater sources. The majority of rotifers encountered are females ranging in size from 70-500 μm . Some species have nutritional requirements (predatory or ingesting organic particles) which may be satisfied by food sources not necessarily associated with surface waters. They generally are only good indicators of surface water influence when supported by the presence of other bio-indicators. Rotifer growth in filtration systems has been suggested.

Plant debris - This is a term for the undigested fecal detritus from herbivorous animals, usually muskrat and beaver. Plant debris is a very light weight (low density) material which is large in size (50-100 μm). It can suggest that animals are present and may shed cysts or oocysts. Plant debris is used as an indicator of surface water influence when combined with other indicators.

Nematodes - These include some 2,000 known free-living species found in fresh water. Some species show an amazing ability to survive and thrive in aquatic habitats under a wide range of ecological conditions. Benthic sediments of lakes and rivers can contain high numbers of nematodes, as can sewage effluent. The top layer of soil can contain over 1 million nematodes per square meter. Soil runoff is a major source of nematodes in source waters for treatment plants. Nematodes and/or their eggs are common in healthy water sources and in spring boxes containing plant material or other detritus. Because of the ubiquitous nature of nematodes, they are not a significant indicator of surface water influence when found in a groundwater source. Nematodes found in finished potable water do not portray a quality product to the public and may also compromise the microbiological integrity of the drinking water. These organisms seem to grow or reproduce in filter beds and distribution systems, so proper backwashing and super chlorination of the filter beds as well as proper maintenance of the distribution system should be conducted routinely.

Pollen - This includes all microspores produced by plants. In the spring and fall, pollen is everywhere, both airborne and waterborne. Because pollen can become trapped in the filter cartridge during insertion of the filter or in the laboratory while the filter is being processed for examination, it is useless for determining direct surface water influence on groundwater and only rarely useful for assessing filtration efficiency.

Ameba - These include the ameboid, flagellated and cyst stages ranging in size from 10 to 600 μm . This group is characterized by the formation of pseudopodia of one type or another. The external surfaces of these ameba are usually very thin compared to the cell coverings of ciliates and most flagellates which are thicker. Most species are free-living and feed on bacteria, algae, other protozoa and debris. Ameba are common in surface waters and proper filtration removes them, but growth of ameba may occur in the filter beds. Ameba are not primary surface water bio-indicators because they may reproduce in groundwaters without direct surface influence.

Ciliates - These free-living protozoa are extremely common. Ciliates are distinguished from other protozoa by the presence of a macronucleus. Like ameba they feed on bacteria, algae, small metazoa, other protozoa and extraneous debris. The presence of ciliates in a groundwater source is not significant when determining surface water influence, because of their ability to survive in the absence of sunlight. Proper filtration removes ciliates, but a few species may grow in the filter beds.

Colorless Flagellates - Although many flagellates are phototrophic, there are many colorless species that grow in the absence of light if sufficient dissolved nutrients are available. They are common in surface water and can be removed by filtration; however, some species may grow in the filter beds. Since these protozoa have broad feeding and nutritional acquisition capabilities (mixotrophic), they are not useful indicators of direct surface water influence. Flagellates possessing chlorophyll are included in the algae category.

Crustaceans - These include all aquatic arthropods which have two pairs of antennae and are fundamentally biramous. The vast majority of known species (>35,000) are marine, but approximately 1200 are found in freshwater. Adults range in size from 250 to 500 μm , with eggs from 50 to 150 μm . Several species occur in healthy surface and ground water. They are not indicators of direct surface water influence. *Daphnia* and *Bosmina* have been known to reproduce in very high numbers under the right environmental conditions and cause filtration clogging problems for water treatment systems. Finished and delivered waters can contain large numbers of crustaceans. It is suspected that eggs will hatch in the filter beds or pass through the filters and hatch in the distribution system.

Other Arthropods - There are a large number of organisms, all with jointed appendages, in the phylum Arthropoda. This category lists the arthropods which are not crustaceans or which are identifiable only to phylum due to the condition of the organism. Chironomid (insect) larvae and eggs are commonly reported in surface waters as are arthropod pieces. Seen less frequently are other insects, water mites and seed ticks. This category is used only for surface water MPA.

Insects/Larvae - This category is used in the EPA Consensus Method for Determining Groundwaters Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA). Insect/Larvae are indicators of surface water influence when they are found in groundwaters.

Other - This category is for any organism not reported in the above categories. Examples include iron bacteria, fungal spores and hyphae, gastrotrichs and/or tardigrades.

Selected references:

AWWA (in publication) **Selected Problem Organisms in Water Treatment. M7 Operator's Identification Guide.**

Dubey, J.P., Speer, C.A. and Fayer, R., editors (1990) **Cryptosporidiosis of Man and Animals.** Boca Raton: CRC Press.

Lee, J.J., Hunter, S.H. and Bovee, E.C., editors (1985) **An Illustrated Guide to the Protozoa.** Lawrence, KS: Society of Protozoologists.

McFeters, G.A., editor (1990) **Drinking Water Microbiology Progress and Recent Developments.** New York: Springer-Verlag.

Pennak, R.W. (1989) **Fresh-water Invertebrates of the United States - Protozoa to Mollusca.** 3rd edition. New York: John Wiley & Sons, Inc.

Pentecost, A. (1984) **Introduction to Freshwater Algae.** Richmond, England: Richmond Publishing Co. Ltd.

US Environmental Protection Agency (1992) **Consensus Method for Determining Groundwaters Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA).** USEPA Manchester Environmental Laboratory, Port Orchard, WA.

Vinyard, W.C. (1979) **Diatoms of North America.** Eureka, CA: Mad River Press, Inc.