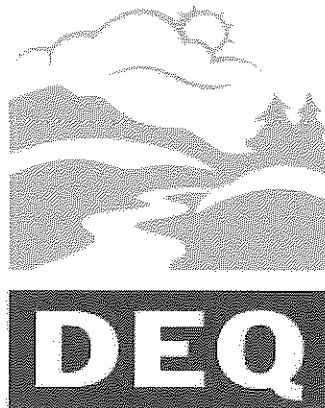


Part 1 of 2

**OREGON
ENVIRONMENTAL QUALITY
COMMISSION MEETING
MATERIALS 06/14/1991**



**State of Oregon
Department of
Environmental
Quality**

This file is digitized in **color** using Optical Character Recognition (OCR) in a standard PDF format.

Standard PDF Creates PDF files to be printed to desktop printers or digital copiers, published on a CD, or sent to client as publishing proof. This set of options uses compression and downsampling to keep the file size down. However, it also embeds subsets of all (allowed) fonts used in the file, converts all colors to sRGB, and prints to a medium resolution. Window font subsets are not embedded by default. PDF files created with this settings file can be opened in Acrobat and Reader versions 6.0 and later.

REVISED

State of Oregon

REVISED

ENVIRONMENTAL QUALITY COMMISSION

A G E N D A

WORK SESSION -- June 13, 1991

DEQ Conference Room 3a
811 S. W. 6th Avenue
Portland, Oregon

- 2:00 p.m. - 1. Background Discussion: New Federal Storm Water Rules and Their Impact on the Department
- 2:45 p.m. - 2. Discussion: Proposed Update of General Conditions included in NPDES Permits
- 3:30 p.m. - 3. Growth Management in the Portland Metropolitan Area: Presentation by Bill Blosser, Chair of the Governor's Growth Council

NOTE: The purpose of the work session is to provide an opportunity for informal discussion of the above items. The Commission will not be making decisions at the work session.

REGULAR MEETING -- June 14, 1991

DEQ Conference Room 3a
811 S. W. 6th Avenue
Portland, Oregon
8:30 a.m.

Special Note: Agenda Item L will be taken up at 10:00 a.m.

Consent Items

NOTE: These are routine items that may be acted upon without public discussion. If any item is of special interest to the Commission or sufficient need for public comment is indicated, the Chairman may hold any item over for discussion. When a rulemaking hearing is authorized, a public hearing will be scheduled and held to receive public comments. Following the hearing, the item will be returned to the Commission for consideration and final adoption of rules. When rules are proposed for final adoption as Consent Items, a hearing has been held, no significant issues were raised, and no changes are proposed to the original draft that was authorized for hearing.

- A. Approval of Minutes of the April 25-26, 1991 EQC Meeting and Telephone Conference Meetings

- B. Approval of Tax Credit Applications
- C. Authorization for Rulemaking Hearing: Asbestos Rule Changes to Incorporate National Emission Standards for Hazardous Air Pollutants for Asbestos
- D. Authorization for Rulemaking Hearing: Authorization for Enforcement Section Staff to Represent the Department in Contested Case Hearings

Rule Adoptions

NOTE: Hearings have already been held on these 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.

- E. Proposed Adoption of Rule Amendments Relating to Charging a fee for Yard Debris Collection
- ~~F. Proposed Adoption of Rules on Fees and Reporting for Hazardous Waste Generators and Treatment, Storage, Disposal and Recycling Facilities~~
- G. Proposed Adoption of Amendments to Industrial Waste Permit Fees
- H. Proposed Adoption of Amendments to On-Site Sewage Disposal Rules on Fees and Personal Hardship Mobile Home Placement

Action Items

- I. Approval of Tualatin River Watershed Nonpoint Source Pollution Management Plan for Agricultural And Forestry Sources
- J. Request by the City of Athena for an Exception to the Dilution Requirement in the Minimum Design Criteria for Sewage Treatment Plants [OAR 340-41-655(1)(c)]
- K. Approval of Waste Load Increase for the City of Lebanon
- ** L. Consideration of Petition to Amend Oregon's Ambient Water Quality Standard for Dioxin (TCDD) Submitted by James River II, Inc., and Boise Cascade Corporation
*** Note: This item is scheduled for 10:00 a.m.*

Information Items

- M. Status Report on Stipulation and Final Order for the City of Portland Regarding Combined Sewer Overflows

- N. Commission Member Reports: (Oral Reports)
 - Governor's Watershed Enhancement Board
- O. Director's Report (Oral Report)
- P. Legislative Update (Oral Report)

Public Forum

This 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.

Because of the uncertain length of time needed, the Commission may deal with any item at any time in the meeting except those set for a specific time. Anyone wishing to be heard on any item not having a set time should arrive at 8:30 a.m. to avoid missing any item of interest.

The next Commission meeting will be Thursday, July 25, 1991, at a location yet to be decided. There will be a brief work session at the same location on Wednesday, July 24, 1991.

Copies of the staff reports on the 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.

June 3, 1991

Approved _____
Approved with corrections _____
Corrections made _____

MINUTES ARE NOT FINAL UNTIL APPROVED BY THE EQC

ENVIRONMENTAL QUALITY COMMISSION

Minutes of the Two Hundred and Twelfth Meeting
April 25-26, 1991

Work Session

The Environmental Quality Commission (Commission or EQC) Work Session was convened on Thursday, April 25, 1991 at about 1:15 p.m. in Conference Room 3a of the offices of the Department of Environmental Quality, 811 S. W. 6th Avenue, in Portland, Oregon. Commission members present were: Chair Bill Hutchison, Vice Chair Emery Castle, and Commissioners Bill Wessinger, Carol Whipple and Henry Lorenzen. Also present were Director Fred Hansen of the Department of Environmental Quality (Department or DEQ) and Department staff.

Item 1. Review of Air Quality Program

Steve Greenwood, Administrator of the Air Quality Division, presented an overview of the Air Quality Program. A primary goal of the Division is to meet the goals of the Federal Clean Air Act (CAA) in Oregon. The CAA contains two types of standards: health based standards for the quality of the air, and standards for control of sources of air pollution. Oregon continues efforts to meet standards for fine particulate matter, carbon monoxide, and ozone. In addition, the new Clean Air Act will increase the number of air toxics to be addressed from 7 to 189. Another federal program effort is the Prevention of Significant Deterioration (PSD) program which is aimed at protecting visibility in pristine areas of the state.

Mr. Greenwood reviewed the provisions of the new Federal Clean Air Act which will require a significant rulemaking effort over the next two years. He noted that the most difficult areas for Oregon to address will be air toxics and ozone attainment in the Portland area in relation to projected growth.

Mr. Greenwood noted that 70% of Oregonians live in areas in non-attainment with air quality standards: 5 areas for carbon monoxide, 3 areas for ozone, and 6 areas for fine particulates (PM₁₀). Significant progress has been made in improving visibility under the PSD program with a 75% decrease in impairment in the central cascades and a 65% decrease in impairment in the northern cascades.

Mr. Greenwood reviewed the organization chart for the Division and briefly reviewed legislative proposals for fees on air pollution sources and additional requirements related to asbestos removal.

Item 2. Charges for Recycling: General Discussion

Jan Whitworth of the Hazardous and Solid Waste Division introduced the topic and a panel of experts including Jerry Powell representing the national perspective, Bob Emerick representing haulers, Jean Roy representing the citizen perspective, and Sue Keil representing local governments. Ms. Whitworth indicated that the intent was to focus discussion on two issues: (1) what are the costs of recycling, and (2) how do we pay for it.

Lissa West of the Hazardous and Solid Waste Division presented background information on the opportunity to recycle act, the definitions in the law and the status of implementation to date. She also identified some of the variables that affect cost of recycling. For example, a survey in McMinnville indicates that the cost per ton for collection of recyclables is six times the cost per ton for collection of garbage, largely due to the small volume of recyclables collected at each stop. The current determinations of what is economic to recycle does not take this type of information into account. Ms. West indicated that residential customers are paying for recycling collection in their basic garbage collection rate. Thus garbage collection is subsidizing collection of recyclables. A variety of methods are used for recovery of costs for collection of commercial and industrial recyclables. Finally, the Attorney General has indicated that the Commission may have some rulemaking latitude in the area of charges for collection of yard debris and industrial materials.

Jerry Powell noted that Oregon is the only state to use a single criteria (the economic test) for determining what is recyclable. About 36 states have comprehensive recycling legislation, and about half of these require that services be provided based on market capacity and known technology to recycle, or they provide a list of materials and allow the local jurisdiction to select a certain number of items from the list, or they establish a mandatory goal that a certain level of recycling be accomplished in a given period of time. He noted that haulers in Oregon have honored the intent of Oregon's recycling law even though the statutory economic test does not make much sense today.

Bob Emerick agreed that the economic test is not a viable test for determining what is recyclable. The true test is what the public wants to recycle. He also noted that the disposal costs vary so widely across the state and that it skews the whole testing process. Therefore the industry favors other criteria that are more realistic.

Jean Roy indicated that the economic test is still valid for comparing materials and deciding which materials to add to the mandatory list for recycling. She noted that local governments

can always go beyond the minimum requirements. She supported mandating that hazardous materials be collected separately. Ms. Roy supported alternative 2 presented in the staff report on page 6.

Sue Keil indicated that local governments would like the flexibility to add materials as they saw market or consumer demand, rather than having it mandated by the state.

Chair Hutchison asked if there are any states that combine all of the options. Jerry Powell responded that Wisconsin had simply banned some materials from landfills, leaving the collectors and local government to deal with the matter. Oregon has done this on lead-acid batteries, waste tires, and some medical waste. He also noted that the Commission could go part way by allowing communities to add to the list, but they could not be added into the economic test. Mr. Powell also stated the view that the reason no one has challenged the economic test may be that they don't want a worse measure. He noted that the public is supportive of recycling, and they don't want to kill it. The easy stuff has been done. The question gets more difficult from here on. Sue Keil agreed and indicated that now, the public wants to get some additional heavy and bulky items out of the waste stream -- including plastics and yard debris.

Bob Emerick stated that SB 66, if it passes, will change the issue completely. When goals are established, the challenge is to find everything that can be done to meet the goal.

In response to a question about whether charging for collection causes a disincentive to recycling, Sue Keil stated that there is a need to be clear on the ability to charge above and beyond the items on the principle recyclable materials list. She also stated that haulers should be able to charge for industrial materials and yard debris. Jean Roy indicated there should be separate lists for residential, commercial, and industrial recyclable materials. Bob Emerick suggested staying with the concept of a base rate.

Chair Hutchison noted that the Department had recommended that a work group be formed to explore the issues and alternatives. The panel agreed that it should be done. Director Hansen indicated that SB 66 will dramatically change the discussion on cost analysis.

Commissioner Whipple made the observation that the discussion had focused on the METRO perspective on recycling but felt the need to hear more in the future about other areas. Director Hansen noted that this discussion had focused on curbside collection which is required in communities with a population of 4000 or above.

Item 3. Water Quality Standards: Review of Issues and Status Report on Triennial Review Process

Neil Mullane of the Water Quality Division staff introduced this item by describing the process for the triennial review of water quality standards to meet Clean Water Act requirements. DEQ initially solicited public comments and suggestions as to which rules should be considered for revision. Based on Department evaluation and the public input, issue papers presenting concerns and proposed rule concepts were prepared on 14 topics. Public notice was given, and the issue papers were distributed for review and comment. Workshops were held to discuss the issue papers and receive input. Based on evaluation of input, the Department proposed further study on six issues using technical committees, and proposed specific rule amendments for eight areas: wetlands, antidegradation, dissolved oxygen, bacteria, toxics, mixing zones, biological criteria, and turbidity. The Commission authorized hearings on the eight at the September 21, 1990, meeting and notice was given. Eight hearings were held in January 1991. The deadline for comment was extended to March 1 based on request from several commenters. Testimony was being summarized and evaluated. The Department proposed to return to the Commission in June with recommendations for adoption of specific rule language on antidegradation, toxics, mixing zones, biological criteria and turbidity. Information on bacteria was still being evaluated, and may be brought forward in June also. Based on evaluation of information received in the hearing process, the Department was now proposing further study using technical committees on the issues of dissolved oxygen and wetlands. The previous issues set aside for technical committee work include temperature, total dissolved solids, toxics equivalency factors, sediment quality standards, and interim sediment quality guidelines. Fish tissue levels are being pursued as a guidance document rather than a standard at this time.

Krystyna Wolniakowski of the Water Quality Division staff summarized concerns raised in the public comment process on the proposed revisions to the antidegradation standard. These included concerns about who should bear the burden of doing the work associated with nominating water bodies to an Outstanding Resource Water (ORW) category, concerns that some waters such as federal and state Wild and Scenic Rivers aren't automatically protected as ORWs, and concerns that inclusion of waters in an ORW category will pose economic hardships to communities and individuals.

Chair Hutchison asked is an option may be to automatically designate state scenic waterways as ORWs and provide a mechanism for removal if the designation is inappropriate. This would place the burden of proof on those suggesting that the designation is inappropriate. Commissioner Lorenzen noted that designation of scenic waterways and wild and scenic rivers may be for reasons not related to water quality, and an automatic designation as an ORW may be inconsistent or inappropriate. Commissioner Castle noted that if the beneficial uses are designated, and then protected, there would appear to be nothing gained by an

additional designation as an ORW. Ms. Wolniakowski responded that, as proposed, the policy to protect high quality waters is a strong policy requiring a Commission decision to allow degradation for good cause. The ORW designation would not allow for such a decision to allow some degradation. The intent was to rely primarily on the high quality waters policy and use the ORW designation only in very special cases.

Gene Foster of the Water Quality Division staff summarized concerns raised on the proposal related to toxic criteria including concerns that a revision to the TCDD criteria was not proposed and that it should be made less stringent, and concerns about DEQ's use of EPA criteria for chloride and aluminum.

Commissioner Lorenzen asked how we should determine the appropriate level of risk in environmental regulation. Director Hansen noted that this issue will be coming forward out of the Environmental Cleanup Division for a work session discussion in September. Chair Hutchison asked what we do when we have adopted a standard such as TCDD based on federal guidance, and now a process is initiated to review the federal guidance itself. Commissioner Wessinger stated his view that we hold to our existing number and do nothing until EPA takes final action.

Director Hansen noted that the Department will continue as outlined in the staff report unless the Commission directs otherwise.

Item 4. Combined Sewer Overflow Strategy: Overview and General Discussion

Item 5. Proposed Stipulated Order for Portland: Summary of Order and Public Comments

These two items were discussed together. Barbara Burton of the Water Quality Division staff provided background information on combined sewer overflows. She noted that four Oregon cities are known to still have some combined sewers. Corvallis and Oregon City are working to eliminate their remaining combined sewers by 1993. Portland and Astoria have many combined sewers and will be required by permit to meet water quality standards.

Ms. Burton noted that Portland is the first to be proposed for a permit dealing with combined sewer overflows. The proposed permit requires water quality standards to be met. Since combined sewer overflows will not meet standards, a Stipulation and Final Order is also proposed to incorporate a compliance schedule. A Public Hearing has been held on the proposed permit and public input was sought on the proposed order. Written and oral testimony was provided by 53 people. Comments have been summarized. Based on comments, the proposals have been revised to require a plan for the facility plan, to require the facility plan be submitted to the Commission for approval, to specify more detail on facility plan requirements, and to deal with the issue of resolving penalties.

Earl Blumenauer, Portland City Commissioner, stated that the process is on the right track, and the City appreciates the efforts and relationship with the Commission and Department. He noted that the correction of combined sewer overflows in Portland was a very large scale project, and that the City had been moving to address the issue with \$30 million already spent, and \$28 million scheduled for capital improvements the next two years. He appreciated the checkpoints and timetable that are proposed.

Pat Parenteau, representing Northwest Environmental Advocates, urged the Commission not to sign an order with a schedule for 20 years. He suggested a need for more analysis to determine what is possible on a faster timetable. He indicated that a law suit has been filed for Northwest Environmental Advocates that has a constructive intent. They seek a compliance schedule that is backed up by court enforcement and the potential for third party enforcement. They are in negotiations with the City. Progress is being made in the negotiations. They are seeking commitments to do easy things immediately. They also are seeking commitments for interim actions as well as long term corrections. Finally, he noted that they are not thrilled with some language of the proposed order that would give the City a basis for defense of law suits.

Jack Smith, an environmental consultant, explained to the Commission how combined sewers work and described several potential options for operational controls (with minimum capital investments) to dramatically reduce pollutant loads in combined sewer overflows.

Chair Hutchison expressed concern about the proposed 20 year program and suggested possibly setting a schedule at the end of 2 years after the facility plan is complete. Commissioner Whipple suggested that 20 years seems a little long, and suggested that Portland's feet need to be held to the fire. Mary Nolan, Administrator of the Bureau of Environmental Services, and Jeff Bauman of her staff, expressed the City's desire to bring maximum practical immediate and interim controls on line as soon as possible. They agreed that periodic review of progress is important and that the renewal of the permit every 5 years assures that will be done. However, they need a level of certainty on the overall schedule so that actions can be efficient planned and implemented.

Commissioner Lorenzen expressed concern about provisions for settlement of violations. Director Hansen noted that it is standard practice in stipulated orders to include provisions to settle the issue of penalties for future violations so as to reduce arguments later.

Pat Parenteau indicated they would like to see performance goals for elimination of loading such as eliminate 30% of the loading from combined sewer overflows by a specific date. Director Hansen indicated that the Department believes the proposed order effectively contains performance standards.

Chair Hutchison asked how the permit addresses growth. Commissioner Blumenauer responded that very little of the growth projected for the region will occur in Portland; about 15,000 people out of a projected 500,000 people for the region. Chair Hutchison commended people for the efforts on the matter.

After further discussion, Chair Hutchison suggested the order again be discussed at a future conference call after Commissioners have an opportunity to review the proposed order with changes to address several issues of concern to the Commission as follows: remove wording that would appear to aid the City in any lawsuit filed against it; require Commission approval of any change to the order since it will be the one to sign the order; provide for public comment before any change to the order; and provide that the Commission may alter the compliance schedule or limitations in the order after reviewing the facility plan.

The Work Session was then adjourned.

Regular Meeting

The Environmental Quality Commission regular meeting was convened at about 8:40 a.m. on Thursday, April 26, 1991, in Conference Room 3a of the Department of Environmental Quality Offices at 811 S. W. 6th Avenue in Portland, Oregon. Commission members present were: Chair Bill Hutchison, Vice Chair Emery Castle, and Commissioners Bill Wessinger, Carol Whipple and Henry Lorenzen. Also present were Michael Huston of the Attorney General's Office, Director Fred Hansen of the Department of Environmental Quality and Department staff.

NOTE: *Staff reports presented at this meeting, which contain the Department's recommendations, are on file in the Office of the Director, Department of Environmental Quality, 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.*

Consent Items

The following items were listed on the agenda as Consent Items:

A. Approval of Minutes of the March 11, 1991 EQC Meeting

A draft of the minutes was circulated to the Commission prior to the meeting.

B. Approval of Tax Credit Applications

The Department recommended that approval be granted on Pollution Control Facility Tax Credit applications as follows:

TC-2215	Emark, Inc.	Solvent Recovery System.
TC-2395	Gregory Forest Products	Log chest with closed recirculation block heating system.
TC-2644	Weyerhaeuser Co.	Stationery containment hood and two piece pivoting front cover on raw material truck dump hopper.
T-2709	Roseburg Paving Co.	Astec Industries Asphalt Coater.
TC-2710	Reerslev Farms, Inc.	Straw storage shed.
TC-2862	Morse Bros., Inc.	Reverse pulse baghouse.
TC-2907	Weyerhaeuser Co.	Three baghouse filters.
TC-2922	Atochem North America	Secondary water containment system for process chemicals.
TC-2935	Temple Distributing, Inc.	Installation of spill containment basins, tank monitor with overflow alarm, automatic shutoff valves and line leak detectors.
TC-2943	Weyerhaeuser Co.	Regenerative air type street sweeper.
TC-2970	C & D Lumber Company, Inc.	Installation of one fiberglass tank and piping, spill containment basin, overflow valve and monitoring well.
TC-2980	Smart Mart, Inc.	Installation of three STI-P3 double wall tanks and double wall fiberglass piping, spill containment basins, automatic shutoff valves, tank monitor, sumps and oil/water separator.
TC-3205	Merritt Truax, Inc.	Installation of leak detection and overflow prevention on ten underground storage tanks in the form of automatic tank gauges and overflow alarm.
TC-3209	Metrofueling	Installation of leak detection and overflow prevention in the form of automatic tank gauges and overflow alarm.
TC-3242	Venell Farms, Inc.	Straw storage shed.
TC-3243	Venell Farms, Inc.	Hay rake; baler and bale carrier.

EQC Meeting Minutes
April 25-26, 1991
Page 9

TC-3244	Venell Farms, Inc.	Mobile Field Sanitizer.
TC-3247	Nixon Farms, Inc.	30' Swath Propane Flamer.
TC-3314	Michael and Lisa Bodtker	Straw storage shed.
TC-3318	Truax Corporation, Inc.	Installation of cathodic protection, fiberglass piping, spill containment basins, automatic shutoff valves and line leak detectors, monitoring wells, sumps and Stage II vapor recovery piping.
TC-3324	Truax Corporation, Inc.	Installation of cathodic protection on three steel tanks and piping and spill containment basins.
TC-3325	Truax Corporation, Inc.	Installation of cathodic protection on three tanks and piping, spill containment basins, automatic shutoff valves and line leak detectors and a tank monitor.
TC-3326	Truax Corporation, Inc.	Installation of cathodic protection on four steel tanks and piping, spill containment basins & automatic shutoff valves.
TC-3327	Truax Corporation, Inc.	Installation of cathodic protection on four steel tanks, fiberglass piping, spill containment basins, automatic shutoff valves and line leak detectors.
TC-3329	Truax Corporation, Inc.	Installation of epoxy lining in and cathodic protection around three tanks and spill containment basins on five tanks.
TC-3330	Truax Corporation, Inc.	Installation of fiberglass piping, spill containment basins, automatic shutoff valves, line leak detectors and cathodic protection on three tanks.
TC-3332	Truax Corporation, Inc.	Installation of fiberglass piping, spill containment basins, automatic shutoff valves and line leak detectors.
TC-3333	Truax Corporation, Inc.	Installation of cathodic protection on five steel tanks and piping.
TC-3334	Truax Corporation, Inc.	Installation of cathodic protection on one steel tank and piping system, spill containment basin and an automatic shutoff valve.
TC-3335	Truax Corporation, Inc.	Installation of cathodic protection on three tanks, spill containment basins & automatic shutoff valves.

TC-3336	Truax Corporation, Inc.	Installation of cathodic protection on three tank and piping systems.
TC-3337	Truax Corporation, Inc.	Installation of cathodic protection on four steel tanks.
TC-3338	Truax Corporation, Inc.	Installation of cathodic protection on three tanks and piping, spill containment basins and automatic shutoff valves.
TC-3340	Truax Corporation, Inc.	Installation of three automatic shutoff valves.
TC-3341	Truax Corporation, Inc.	Installation of cathodic protection on four steel tanks and piping.
TC-3342	Truax Corporation, Inc.	Installation of spill containment basins on three underground storage tanks.
TC-3343	Truax Corporation, Inc.	Installation of fiberglass piping for three tank systems and tank lining in one tank.
TC-3344	Truax Corporation, Inc.	Installation of cathodic protection on three steel tanks.
TC-3345	Truax Corporation, Inc.	Installation of cathodic protection on three steel tanks and piping.
TC-3346	Truax Corporation, Inc.	Installation of cathodic protection on four steel tanks.
TC-3347	Truax Corporation, Inc.	Installation of spill containment basins, automatic shutoff valves and line leak detectors.
TC-3348	Truax Corporation, Inc.	Installation of cathodic protection, fiberglass piping, spill containment basins, automatic shutoff valves and line leak detectors, monitoring wells, and Stage I vapor recovery.
TC-3349	Truax Corporation, Inc.	Installation of epoxy lining and cathodic protection on three steel tanks, fiberglass piping, spill containment basins, automatic shutoff valves and line leak detectors.
TC-3355	Strome-Fisher Farms, Inc.	Straw storage shed.
TC-3357	Rogue Valley Oil Co., Inc.	Installation of four STI-P3 tanks and fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, overfill alarm and monitoring wells.
TC-3358	Rogue Valley Oil Co., Inc.	Installation of four fiberglass tanks and piping, spill containment basins, tank monitor, turbine leak detectors, overfill alarm and monitoring wells.

TC-3360	Willamette Industries, Inc.	Western Pneumatic Bagfilter.
TC-3362	Garold H. Leppin	Straw storage shed; balewagon.
TC-3363	Ridenour Oil Co., Inc.	Installation of four STI-P3 double wall tanks and fiberglass piping, spill containment basins, tank monitor, line leak detectors, monitoring wells, automatic shutoff valves, piping for Stage II vapor recovery and an oil/water separator.
TC-3364	Ridenour Oil Co., Inc.	Installation of four STI-P3 double wall tanks and fiberglass piping, spill containment basins, tank monitor, line leak detectors, monitoring wells, automatic shutoff valves, piping for Stage II vapor recovery and an overfill alarm.
TC-3366	Polk County Farmers Co-op	Installation of five double wall fiberglass tanks and piping, spill containment basins, tank monitor, monitoring wells, automatic shutoff valves and line leak detectors.
TC-3367	Pratum Co-op Warehouse, Inc.	Installation of three fiberglass tanks and double wall fiberglass piping, spill containment basins, tank monitor, monitoring wells, oil/water separator, automatic shutoff valves and a bottom loader.
TC-3368	Roadrunner Gas & Grocery	Installation of an automatic tank monitoring system.
TC-3369	Smith Bros. Farms	Used John Deere 8640 Tractor.
TC-3370	Rolland S. Piatt	Installation of double wall fiberglass piping, tank monitor, spill containment basins, turbine leak detectors, overfill alarm, automatic shutoff valves and Stage I and II vapor recovery equipment and piping.
TC-3372	Ernest Glaser Farms	Modified 60B Hesston Stakhand.
TC-3373	Brian Glaser	John Deere 4955 Tractor.
TC-3374	Grange Coop. Supply Assoc.	Installation of a tank monitor system and an overfill alarm.
TC-3375	Grange Coop. Supply Assoc.	Installation of a tank monitor system.
TC-3376	James D. Ellison	Installation of epoxy lining in four steel tanks and spill containment basins.

TC-3377	Barry Desbiens, Inc.	Installation of three fiberglass tanks and fiberglass piping, spill containment basins, tank monitor, line leak detectors, float vent valves, overfill alarm, monitoring wells and Stage II vapor recovery piping.
TC-3378	L. P. Busch, Inc.	Installation of three STI-P3 tanks and fiberglass piping, spill containment basins, tank monitor, line leak detectors, float vent valves, monitoring wells, sumps and Stage I & II vapor recovery.
TC-3379	L. P. Busch, Inc.	Installation of three STI-P3 tanks and fiberglass piping, spill containment basins, tank monitor, line leak detectors, float vent valves, sumps and Stage I & II vapor recovery.
TC-3380	L. P. Busch, Inc.	Installation of three STI-P3 tanks and fiberglass piping, spill containment basins, tank monitor, line leak detectors, float vent valves, monitoring wells, sumps and Stage I & II vapor recovery.
TC-3381	Byrnes Oil Co., Inc.	New installation of two fiberglass tanks, fiberglass piping, spill containment basins, tank monitor, float vent valves and monitoring wells.
TC-3382	Ronald H. Gustafson	Installation of three STI-P3 tanks and fiberglass piping, cathodic protection, spill containment basins, tank monitor, turbine leak detectors, float vent valves, monitoring wells and Stage I vapor recovery equipment.
TC-3386	Johnson Oil Company, Inc.	Installation of epoxy lining in three steel tanks and spill containment basins.
TC-3387	Johnson Oil Co., Inc.	Installation of two STI-P3 2-compartment tanks and fiberglass piping, spill containment basins, line leak detectors, monitoring wells and automatic shutoff valves.
TC-3389	Baker Valley Chevron	Installation of a tank monitor and spill containment basins.
TC-3391	Delphia Oil, Inc.	Installation of one additional fiberglass tank and fiberglass piping, spill containment basins, monitoring wells, sump and automatic shutoff valves.
TC-3392	Delphia Oil, Inc.	Installation of spill containment basins and automatic shutoff valves.

TC-3393	Delphia Oil, Inc.	Installation of fiberglass piping, spill containment basins, monitoring wells and automatic shutoff valves.
TC-3394	Sixth Street Shell	Installation of fiberglass piping, cathodic protection, spill containment basins, line leak detectors, float vent valves, monitoring wells and Stage I and II vapor recovery piping and equipment.
TC-3395	Third Street Shell	Installation of three double wall fiberglass tanks and piping, spill containment basins, turbine leak detectors, float vent valves, monitoring wells and Stage I and II vapor recovery piping and equipment.
TC-3396	Plum Fierce Shell	Installation of three double wall fiberglass tanks and piping, spill containment basins, turbine leak detectors, float vent valves, monitoring wells and Stage I and II vapor recovery piping and equipment.

The Department also recommended approval of an application filing extension of one year requested by Fujitsu Microelectronics, Inc.

C. Authorization for Hearing on Proposed Amendments to the Underground Storage Tank (UST) Rules

This agenda item requested authorization to hold a rulemaking hearing on proposed modifications to the Underground Storage Tank (UST) Rules as presented in Attachments A, B, C, D, E, & F of the staff report. In order to obtain approval to operate the state UST regulation program in lieu of the federal program, it is necessary to adopt technical and financial responsibility requirements that are no less stringent than federal rules. Additional modifications are proposed to clarify existing rules and improve program operation for both the regulated community and the department.

D. Authorization for Rulemaking Hearing on Rules for Hazardous Waste Fees, Hazardous Waste Generator Registration, and Hazardous Waste Reporting

This agenda item requested authorization to hold a rulemaking hearing on proposed amendments to the rules pertaining to reporting requirements and fees for hazardous waste generators and treatment, storage, disposal and recycling facilities (TSDRF) as presented in Attachment A of the staff report. The proposed rule modifications would give the Department additional authority to ask for information, correct deficiencies in current reporting system, and eliminate redundant and inconsistent reporting requirements between state and federal rules. The rules would also replace the existing fee schedule

which sunsets on June 30, 1991, with a phased in fee structure recommended by the Hazardous Waste Advisory Committee which will equitably distribute the fees, and offer incentives to manage hazardous waste in accordance with the prescribed hierarchy (encourage reduction, reuse and recycling rather than landfilling).

E. Authorization for Rulemaking Hearing on Proposed Amendments to Industrial Waste Permit Fees

This agenda item requested authorization to hold a rulemaking hearing on proposed amendments to increase permit fees for industrial wastewater permits as proposed in Attachment A of the staff report. The fee increases are necessary to offset increased costs, stagnant federal funding, and limited general funds and provide funding for regulatory activities included in the Department's budget request. The proposed fee schedule was reviewed and supported by an advisory committee.

F. Authorization for Rulemaking Hearing on Proposed Rules Describing the Process for Establishment of Instream Water Right Flows for Pollution Abatement

This agenda item requested authorization to hold a rulemaking hearing on proposed new rules to define the policy and procedures by which the Department will apply to the Water Resources Department (WRD) for instream water rights for the purpose of pollution abatement pursuant to ORS 537.332 et.seq. The proposed rules were included as Attachment A of the staff report. The statute, adopted in 1987, allows the Departments of Environmental Quality, Fish and Wildlife, and Parks and Recreation to apply for instream water rights for public uses. Water Resources Department rules require each agency to adopt rules establishing the methodology for determining the appropriate flow to support the instream public use before an application can be submitted. The proposed rules were intended to implement the 1987 statutory requirements.

G. Authorization for Rulemaking Hearing on Proposed Modification to Grant Relief from the Continuous Emission Monitoring Requirements for Small Sources in the Medford AQMA

This agenda item requested authorization to hold a rulemaking hearing on proposed modifications to the industrial rules for PM₁₀ emission control in the Medford-Ashland Air Quality Maintenance Area (AQMA) and the Grants Pass Urban Growth Area (UGA) as presented in Attachment B of the staff report. The rule modification would relieve small boiler operators (equal to or less than 35 million BTU/hr heat input), with dry boiler exhaust stacks, from Continuous Emission Monitoring (CEM) requirements for

carbon monoxide (CO) and oxygen (O₂). The cost of compliance with the current rule was found to be excessive for several small sources. The less costly alternative source testing requirements proposed in the rule amendment for the small boilers would assure compliance with emission requirements.

Chair Hutchison asked that the minutes for the March 11, 1991, meeting be expanded on page 22 to more fully reflect the Commission response to the Portland presentation. Commission members asked that Item F and Tax Credit Application TC 3381 be removed from the consent agenda.

Action on Consent Items A, B (except TC 3381), C, D, E, and G:

It was MOVED by Commissioner Castle that the Department recommendation on consent agenda items A (with added discussion as requested), B (except TC 3381), C, D, E, and G be approved. The motion was seconded by Commissioner Whipple and unanimously approved.

It was MOVED by Commissioner Wessinger that the Department recommendation on Tax Credit Application TC 3381 be approved. The motion was seconded by Commissioner Whipple and approved with four yes votes and Commissioner Lorenzen abstaining due to a potential conflict of interest.

Consideration of Consent Item F: (Authorization for Rulemaking Hearing on Proposed Rules Describing the Process for Establishment of Instream Water Right Flows for Pollution Abatement)

Neil Mullane of the Water Quality Division staff explained that 1987 legislation allowed three agencies to apply for instream water rights: the Department of Fish and Wildlife for instream flows for fish, the Department of Parks and Recreation for instream flows for recreations, and the Department of Environmental Quality for instream flows for pollution abatement. In order to qualify for an instream right, the Department must adopt rules establishing the methodology to be used for determining the amount of water that is necessary in the stream for pollution abatement. As an example, Mr. Mullane indicated that the Department could apply for an instream water right on a TMDL stream, with the quantity applied for equal to the amount of water that the TMDL is based upon.

Commissioner Lorenzen asked for clarification of how the process would work near the end of a stream where there was no longer any need for dilution of additional wastes. Mr. Mullane explained that the instream right would apply to a specifically designated reach of

the stream and not the entire stream. An instream right could affect upstream water users, but would not restrict users downstream from the segment.

Commissioner Lorenzen asked how balancing would be accomplished under the rules between competing economic interests such as people who would rely on the water for instream pollution abatement, and people who would use the water for irrigation or some other out of stream purpose. Director Hansen noted that this was a fundamental issue with the basic water law which gives highest priority to the first applicant, without regard to any balancing of economic or any other interests. Director Hansen continued that the Department would not seek to establish an instream right for pollution abatement as a substitute for requiring treatment of wastes. The Department would expect sources to reduce pollutant loads to meet water quality standards. However, there are situations where establishment of a minimum instream flow may be necessary and appropriate to protect water quality. A TMDL stream would be an example. In such cases, standards are not being met even though wastes are treated to the nationally required best practicable treatment technology levels. Based on a study to determine stream flows, waste loads, and assimilative capacity of the stream, the Department establishes a total maximum daily load that is based on a target stream flow level. The load is then allocated to the various sources, and they are required to install more stringent controls to meet their load allocation. If stream flow is later reduced by allocation of a water right for a new water right applicant, the water quality control determinations that everyone relied upon is collapsed. The only recourse then for DEQ is to require the dischargers to go to still more stringent and costly controls. The ability to apply for an instream right could give some certainty to the sources making the substantial investment in pollution controls. However, if stream flows were not sufficient to meet the instream target, the sources may still have to further reduce discharges to meet water quality standards.

Chair Hutchison noted that the prior appropriation system for making water allocation decisions was not a good approach, and this process moves in the direction of correcting that. He further felt that rules need to be adopted so that the tool is available to use when and as needed.

Commissioner Lorenzen continued to express concern about the apparent lack of a process in the law to evaluate alternative and make a balancing decision. He suggested that perhaps the rules could be drafted to partially accomplish this in the process of determining where and when to apply for an instream right.

Commissioner Whipple indicated that she had not understood that this tool was necessary to deal with water quality issues. She was not convinced that DEQ should be out to get water rights tied up before others do.

Commissioner Castle stated that this statute adds to the tools of the Department. He noted that granting of an instream right would not interfere with any existing water right. It further adds a little symmetry to the process that has been out of balance in favor of out of stream uses of water. If this process had been in place earlier, many of the problems agencies are now trying to deal with could have been prevented. Commissioner Wessinger stated that this tool is useful in the overall scheme of managing water quality.

It was MOVED by Commissioner Wessinger that the Department recommendation be approved. The motion was seconded by Commissioner Castle and approved with three yes votes, Commissioner Whipple voting no, and Commissioner Lorenzen abstaining.

Rule Adoptions

H. Proposed Adoption of Amendment to the Industrial Volatile Organic Compound (VOC) Rules for Portland Ozone Non-Attainment Area

This item recommended that the Commission adopt rule amendments to the Industrial Volatile Organic Compound (VOC) Rules as proposed in Attachment A of the staff report. The proposed amendments would revise the existing rule and the State Implementation Plan (SIP) for attainment of the ambient air standard for ozone to be consistent with federal requirements. The rule amendments would (1) lower the exemption point for small surface coating sources from 40 to 10 tons per year, (2) require daily record keeping of VOC content for small surface coating sources, (3) lower the VOC emission limit for high performance architectural coating sources, (4) in certain cases allow an affected source to obtain rule exception upon Department and EPA approval of a source specific SIP revision, (5) establish a new rule related to aerospace component coating, (6) require Reasonably Available Control Technology (RACT) for major sources not covered by specific federal RACT guidelines, and (7) add and revise rule definitions consistent with federal definitions. A public hearing was held on the proposed rule amendment, and the amendments recommended for adoption include modifications made in response to public comments and discussions with EPA.

Brian Finneran, of the Air Quality staff, presented background information on the Department recommendation.

Bonnie Gariepy, representing Intel Corporation, expressed agreement with the intent of the rule, but was concerned about the hearing process. Specifically, the notice did not identify the extent of the proposed rule changes and she was concerned that all affected sources may not have been involved. Also, items were added to the rules after the hearing such that there was inadequate opportunity for review and input. Finally, she expressed the view that the EPA deadline was not that real.

Steve Brown, Stoel Rives Boley James & Grey, representing Precision Castparts, Tektronix, and others, stated that he didn't object to most of the rules, but had problems with the requirement for RACT for 100 ton plus sources and the lack of guidance available for making the RACT determination. He also questioned whether the rule is required under the Clean Air Act for Portland which is classified as marginal. Finally, he felt the rules should be sent back out for public comment because of the extent of changes made after the hearing.

Pat Parenteau, Perkins-Coie, representing Boeing, indicated their desire to comply, but expressed concern that the rules would go into effect immediately upon adoption and would not allow for a compliance schedule to come into compliance. He asked that provisions be incorporated to allow a compliance schedule to be included in a permit. He agreed with the separate aerospace category and the provision for alternative emissions limits for each coating, but was concerned with process for EPA approval as a SIP revision because Boeing would be in non-compliance while EPA was reviewing the SIP. Finally, he expressed concern with the shift from annual to daily reporting and record keeping, and the time allowed to implement the extensive changes required. He urged a delay in adoption of the proposed rules to allow time to try to address the additional concerns raised.

Commissioner Wessinger asked how much the rules had been changed since the hearing. Brian Finneran responded that there had been quite a few changes in response to hearing testimony. John Kowalczyk, of the Air Quality staff, indicated that the biggest change was the provision for a case by case relaxation upon application. Since EPA will not approve a generic relaxation, each application would have to be processed as a SIP revision. Chair Hutchison asked if there would be any problems associated with delay in Commission adoption. Mr. Kowalczyk responded that the Clean Air Act requires action by May 15, 1991, that EPA takes the deadline seriously, and that delay also might jeopardize settlement of a lawsuit on the issue. In response to questions on compliance schedules, Mr. Kowalczyk stated that the rules allow compliance schedules. He also noted that sources are currently in non-compliance with federal rules because EPA never approved the 1986 EQC rule which relaxed the standards. The proposed rule makes state rules compatible with the federal requirements. In response to a question from Chair Hutchison, Michael Huston noted that a proposed rule can be modified after the hearing in response to testimony received.

After further discussion, the Commission decided by consensus to defer action until the scheduled conference call on May 14. In the interim, the staff was directed to meet with the affected sources in an effort to resolve outstanding differences.

I. Proposed Adoption of Rules for Stage II Vapor Recovery

This item recommended that the Commission adopt rules to require installation of facilities to control refueling vapors at gasoline stations in the Portland area (Stage II Vapor

Recovery) as presented in Attachment A of the staff report. Specifically, the rule would require, over a three year period, the installation of Stage II vapor recovery equipment at all gasoline service stations with more than 600,000 gallons of annual throughput in Clackamas, Multnomah and Washington Counties. This action would help attain and maintain compliance with ozone air quality standards while accommodating growth and development. The Stage II equipment collects gasoline vapors expelled from the vehicle fuel tank during refueling and return the vapors to the underground storage tank. In response to hearing testimony, the rule initially taken to hearing was modified to extend the compliance dates by four to twelve months and provide other clarifications of the rules.

Merlyn Hough of the Air Quality Division staff introduced this agenda item by showing the Commission a sample of the motor vehicle fueling nozzle and hose used for Stage II vapor recovery. He stressed that the goal of the proposed rule was to meet the ozone standard by 1992. The proposal is consistent with the 5 principles adopted earlier by the Commission.

Chair Hutchison asked about the schedule for the rest of the state. Mr. Hough stated that would depend on EPA actions. They are looking at the issue of toxics and are pursuing a nationwide requirement for Stage I vapor recovery to be installed by October 1993. Commissioner Wessinger asked how many stations that pump more than 600,000 gallons per year are located outside the Urban Growth Boundary but within the tri-county area. Mr. Hough made an estimate of approximately 60.

It was MOVED by Commissioner Wessinger that the Department recommendation be approved. The motion was seconded by Commissioner Lorenzen and unanimously approved.

J. Proposed Adoption of Rules on Recycling and Solid Waste Planning Grants

This item recommended that the Commission adopt rules to establish program requirements for solid waste planning and recycling grants pursuant to legislation enacted in 1989. The proposed rules were included in Attachment A of the staff report. The rules describe (1) grant limitations, (2) eligible grant projects, (3) grant selection criteria, (4) grant approval process, (5) grant agreements and conditions, and (6) the grant application process. Funding for the grants comes from a fifty cent per ton surcharge on domestic solid waste received at disposal sites enacted by the 1989 legislature. A work group assisted the Department in development of the rules. The Solid Waste Advisory Committee and Waste Reduction Advisory Committee reviewed the rules and provided comments. The rules proposed for adoption were modified in response to testimony received at the public hearing.

Jan Whitworth and Jackie Moon of the Hazardous and Solid Waste Division staff introduced this item. They noted that four hearings had been held. Chair Hutchison asked how the rules related to SB 66 being considered by the current legislature. The staff responded that

the rules are not currently related; however, it's possible that local governments may ask for grant assistance in the future to implement newly mandated recycling activities. It was noted that the rules would need to be amended if such proposals are to be funded.

It was MOVED by Commissioner Castle that the Department recommendation be approved. The motion was seconded by Commissioner Whipple and unanimously approved.

Action Items

K. Request for Extension of a Variance from Rules Prohibiting Open Burning of Solid Waste

This item requested that the Commission (1) grant an extension to May 31, 1994, of variances to continue open burning at sixteen solid waste disposal sites, (2) require each permittee to begin planning for an alternative to open burning at the sites, and (3) deny an extension of variances to three additional disposal sites. Variances for twenty sites were previously approved by the Commission on June 13, 1986. Nineteen sites in eastern Oregon have requested an extension of their variances. Three of the sites are on BLM land and continuing the variances for these sites would be contrary to BLM requirements. Therefore, the Department recommended denial of the requested extension for these sites (Richland, Halfway, McDermitt). For the remaining 16 sites, the Department recommended approval of five year variance requests with "phase-out" conditions which would require development of a phase-out plan during the fourth year of the variance, and negotiation of a closure permit during the fifth year. The sites included were: Dayville, Long Creek, Monument, Seneca, Adel, Christmas Valley, Fort Rock, Plush, Silver Lake, Summer Lake, Paisley, Jordan Valley, Juntura, Imnaha, Troy, and Mitchell.

Ernie Schmidt of the Hazardous and Solid Waste Division staff presented a short history of the open burning problem in the state. Chairman Hutchison asked if we could possibly shorten the time frame to under the proposed three year variance. Mr. Schmidt responded that this schedule had been worked out with the regional offices, and would allow for planned regional involvement when the compliance conditions became effective.

Commissioner Castle asked if we were trying to impose "valley" standards on small rural communities. Director Fred Hansen and staff responded that this was probably the case but these standards were being imposed by EPA through the criteria developed under RCRA.

It was MOVED by Commissioner Castle that the Department recommendation be approved. The motion was seconded by Commissioner Wessinger and unanimously approved.

L. Request by Oremet Titanium for an Increase in Permitted Discharge Limitations for Total Dissolved Solids

This item requested that the Commission adopt findings and approve a seasonal increase in the permitted discharge limitations for total dissolved solids (TDS) to Oak Creek by Oremet during times when stream flows are higher. No increase in TDS will be allowed during the summer low stream flow period. The increase wet weather discharge limit for TDS will allow Oremet to complete their plant expansion and increase production. The Department evaluated the proposal and concluded that the increased discharges during the specified higher stream flow periods (wet weather) would not threaten or impair any recognized uses. Oremet will be required by permit condition to evaluate options for elimination of discharges to Oak Creek when flows are less than 10 cfs, and reduction of the size of the allowable mixing zone to 150 feet below the discharge when flows are greater than 10 cfs. The Department expects to incorporate these requirements into the Company's permit upon renewal in 1996.

Ken Vigil of the Water Quality Division staff noted that the TDS consists of basic salts which are not a water quality problem at low concentrations, but can be toxic at high concentrations. The proposed discharge is in the moderate range. Kent Ashbaker of the Water Quality Division staff stated that during summer, the Oremet effluent is the total flow of Oak Creek in the vicinity of the discharge. The Company has been discharging there under these conditions for many years. They currently add dilution water to reduce the impact of their effluent. The proposed permit would essentially require development and implementation of an alternative to summer discharge within 5 years.

Gerald D. Cork, P.E., Director of Engineering for Oregon Metallurgical Corporation, requested that the permit be granted, but expressed concern about some of the conditions. He noted that the Company is in the process of expanding production capacity from eight to twelve furnaces and applied for the permit in June 1988. He stated that the Company meets all permit limits except for the TDS parameter, and that their discharge enters the creek over a considerable distance via a wetland. They have studied their effluent and found no toxic effects. He also stated that the amended mixing zone provisions and the expiration of the TDS limits at the end of the permit period have not been discussed with the Company. Finally, he stated that a study should be done to determine the impact on Oak Creek that will result if the Oremet discharge is eliminated. He concluded by requesting issuance of the permit with the contested conditions modified to exclude the new definition of a mixing zone and the requirement to eliminate the discharge when stream flows are low.

Roger Ovink, CH₂M-Hill Consulting Engineers, Environmental Consultant to Oremet, stated that a good bioassay data base has been compiled on Oak Creek. He expressed concern about a storm water discharge from an unknown source that is adversely affecting the creek.

David Paul and Paula Meske, representing Northwest Environmental Defense Center, stated that Oremet has 600 violations of their NPDES permit. He stated that the Commission must make a finding that uses are being protected before a permit can be issued. The 1990 305(b) report of the Department indicates that uses are not being met at present. He felt the Commission had an administrative problem. He urged the Commission not to grant an increase to a company that had violated its permit. He also stated that the Company has been pumping groundwater for dilution without obtaining a permit from the Water Resources Department.

Lydia Taylor, Administrator of the Water Quality Division, noted that some of the issues raised were related to the permit which is issued by the Department, and subject to appeal to the Commission. The decision before the Commission is limited to the proposal to adopt findings and approve an increased discharge of TDS to Oak Creek in the winter when flows are high.

Chair Hutchison asked about the significance of the groundwater issue. Ms. Taylor stated that the Department's permit limits remain the same whether the Company uses groundwater or not. Thus, it is a matter that may make compliance more difficult and they may have to consider other options, including elimination of discharge to Oak Creek. Chair Hutchison then asked about the mixing zone issue. Ken Vigil of the Water Quality Division staff stated that during the winter, the discharge occurs through several fingers coming from the wetland. However, during the summer, most of the discharge occurs through one of the fingers. He indicated that a clearer definition of the mixing zone is needed to define the starting measuring point for the mixing zone boundary of "150 feet from the point of discharge".

Commissioner Wessinger asked about the administrative problem referred to by Mr. Paul. Mr. Paul indicated he was referring to the 100 mg/l TDS standard that is proposed to be exceeded. Ken Vigil noted that 100 mg/l is the level set for streams in the Willamette Basin, and that the rule allows other values to be considered if found reasonable to protect uses. The Department has concluded based on review of available information that 500 mg/l will protect beneficial uses in all waters. Kent Ashbaker noted that the 100 mg/l is a guide concentration that is listed in the rules based on the normal levels found in the Willamette basin streams. It is not a level that is needed to protect beneficial uses. Thus, the rule allows the Director to approve an increase as long as it continues to protect uses.

Commissioner Whipple asked about the issue of no flow vs. effluent flow. Rick Hafele of the Laboratory indicated he has evaluated the stream during the summer. Upstream, the stream has a healthy community of insects, but few fish. There are isolated pools with little flow between them. Downstream, there was some decline of the invertebrate community, in part affected by the storm drain. Without the discharge, the downstream area would become pools with very little flow between them. The current fish community would likely

not be the same. He noted that the Department of Fish and Wildlife indicates that streams like Oak Creek are used by cutthroat trout in the winter for spawning, but the streams are not used in the summer by game fish. He also noted that Oak Creek does not appear to have an adverse effect on the biological community of the Calapooya during the summer. This is with TDS values of 70 mg/l upstream of Oak Creek, and about 400 mg/l downstream from the confluence. Lydia Taylor reminded the Commission that the proposed permit would allow discharge under existing limitations during the summer while the Company studied alternatives and developed a plan to meet new dilution and mixing zone requirements that would go into effect in 5 years when the next permit is issued. She also reminded the Commission that the proposal before the Commission seeks approval of a waste load increase for TDS for the winter only.

The Commission and Department then reviewed the proposed findings on page 7 and 8 of the staff report. The findings conclude that the increased TDS load in the winter will not cause water quality standards to be violated, will not threaten or impair any recognized beneficial uses, that the stream is not classified as water quality limited for total dissolved solids, and that the proposed activity is consistent with the acknowledged local land use plan. In response to a question from the Commission, Michael Huston responded that the rules contemplate an exception provided the uses are protected.

It was MOVED by Commissioner Castle that the Department recommendation be approved. The motion was seconded by Commissioner Lorenzen and unanimously approved.

Informational Items

M. Commission Member Reports

Chair Hutchison presented a Chairs Report to the Commission. He reported that the terms of both the Chair and the Vice Chair end on June 30 and that they are working with the Governor's office to assure a smooth transition. He expected that a transition would occur about September. He expressed a desire to get a number of things done in the next few months to aid that transition. One would be to assimilate the results of the legislative session and extend by two years the Strategic Plan. He hoped to see the forestry issues in the Tualatin resolved. He hoped to see the mining regulations adopted and issues surrounding the Salt Caves hydroelectric project resolved. He hoped to see some of the litigation issues resolved, including the air quality case, and perhaps the case involving the City of Portland sewer permit.

With regard to meetings, Chair Hutchison urged that citizen and staff intensive items be scheduled first, and to be as efficient as possible in use of staff time. He supported the continuation of work sessions to aid in better understanding of issues. He urged that care

be taken to not allow things to move too fast to happen right. At times, it may be better to miss a perceived deadline in order to more fully discuss and understand the issues and make a better decision.

Chair Hutchison expressed the view that the triennial review process will play an increasingly important role in setting standards that will apply to permits. He noted that some of the issues raised by Associated Oregon Industries were reflected in the Thursday discussion on triennial review of the water quality standards. He stressed the importance of getting staff reports with sufficient time for review so as to facilitate full discussions of the issues and reasons for recommendations. He hoped that efforts will continue to improve staff reports to include all the issues and present all sides of the debate. Specifically, with respect to the triennial review of water quality standards, he expressed the desire to see a full discussion of the issues in June.

He suggested that the staff reports should generally be modified to make sure the issue of how a proposal relates to other laws, including federal laws, and laws of other states is clearly addressed.

On the issue of stringency, Chair Hutchison urged a policy of adopting standards that are in the best interest of environmental quality for Oregon, consistent with the following factors: a level playing field from an economic standpoint, impact of inconsistency, relationship between the magnitude of the problem and the standard proposed, and attention to fast vs slow compliance.

Chair Hutchison noted that he was pleased to note that the Department is reviewing the permit issuance process in an effort to streamline it. He stated he had worked with the Attorney General's office on the third party appeal issue, and has now concluded that his fundamental concern is the way we issue permits. Perhaps a different administrative procedures act would be appropriate for DEQ to deal with contested cases in a different way that would set the record early and speed the passage of issues to the Court of Appeals. He urged consideration of using the triennial review process to set permit standards and then issue group permits in a manner that would have less impact on staff resources and provide a better context for the issues.

Finally, he urged consideration of the idea of alternative dispute resolution as a better way to avoid court actions.

Commissioner Castle supported the continued use of work sessions, but felt that the desired informal interchange of a work session does not occur when all information is submitted in advance in writing, and positions tend to be set and argued rather than having a free discussion. He stressed that the regular meeting rather than the work sessions should be used to secure a decision or the position of the Commission. He would like to be able to ask

questions in a work session without worrying about people trying to sense or interpret his position on an issue.

N. Director's Report (Oral Report)

Director Hansen reported on the following items:

1. The Department will begin presentations before the Ways & Means Subcommittee on Wednesday. Discussions are expected to continue for about three weeks.
2. The Governor's work group on heap leach mining, headed by Martha Pagel, continues to meet. The main issues being discussed are (1) a consolidated application process, (2) whether pits should be filled in (reclamation), and (3) whether a moratorium should be put in place until the state process for review is established by rule.
3. EPA Administrator Bill Reilly has announced that EPA will conduct a one year review of dioxin criteria. Because the review will look at several factors used to determine risk, the final result could be that the standard could go up or down. It is too early to tell at this point.
4. A Morrow Count Circuit Court Judge issued an injunction stopping the Department from collecting the surcharge on out-of-state waste. The issue was whether the E-Board had authority to overrule the EQC.
5. The Federal Clean Water Act is expected to be up for reauthorization this year. Lydia Taylor has suggested improvements through the Association of State and Interstate Water Pollution Control Administrators. One of the issues will be whether federal agencies should be required to comply with non-point source requirements. The non-point source provisions will be controversial and will have a potentially significant effect on forestry and agriculture. Other issues will be related to wetlands protection and groundwater.
6. Governor Roberts kicked off a public service campaign last week which encourages people to use alternative transportation. DEQ was one of nine agencies that joined in a partnership to produce TV, radio and newspaper public service ads, along with a small poster.

O. Legislative Update (Oral Report)

John Loewy reported that the Hazardous Waste fee bill was unanimously approved by the Senate Agriculture and Natural Resources Committee and was forwarded to the Ways and Means Committee. The approved bill includes a phased in fee increase. The recycling bill, SB 66, was approved in committee and sent to the Senate floor. The House Energy and Environment Committee will hold works sessions on the air fee bill.

Public Forum

No one appeared at the public forum.

There was no further business, and the meeting was adjourned at about 12:30 p.m.

BACKGROUND OF THE DEQ

Prior to 1968, DEQ had no permitting process - We had to prove pollution.

1967 Legislature required a permit for treatment and disposal of wastewater. We started issuing permits in January 1968.

FEDERAL WATER POLLUTION CONTROL ACT OF 1972 (CLEAN WATER ACT)

Required permits to discharge pollutants from a point source to waters of the United States (National Pollutant Discharge Elimination System - NPDES)

NPDES Permit program was delegable to states who could show equivalent authority and capability. Oregon received primacy in September 1973.

Storm water considered hard to regulate by permit so EPA determined that it would be considered a non-point source.

EPA was sued by environmental groups and was forced by the courts to regulate storm water discharges by NPDES permit; However, they were not forced to regulate all storm water.

EPA has worked for many years to write rules for the permitting of storm water discharges.

Final rules were adopted November 16, 1990.

CATEGORIES OF STORM WATER DISCHARGES REGULATED BY NPDES PERMIT

Municipalities with separate storm sewers serving over 100,000 persons. (Portland, Eugene, Multnomah County, Washington County)

Others: Clackamas County added because of Tualatin Basin
Salem a medium municipality from 1990 census

Several categories of "industrial sources"

Many industrial sites categorized by SIC code

Land fill sites , certain sewage treatment plant sites, and land application sites

Certain transportation categories, including storm runoff from vehicle maintenance and equipment cleaning areas.

Estimated from 6,000 to 10,000 new industrial permittees.

Construction activities where 5 acres or more are disturbed.

APPLICATION REQUIREMENTS (primary objective of the EPA rules)

Municipalities

Large municipality - Part 1 by November 1991
(Portland) Part 2 by November 1992

Medium municipality - Part 1 by May 1992
(Others) Part 2 by May 1993

Industries

Types of Applications - Group applications, individual applications, Notice of Intent (General Permit)

Group applications - Part 1 September 30, 1990
Part 2 May 18, 1992

Individual Applications - November 18, 1990 (May 18, 1992)

TYPES OF PERMITS

Municipalities - Individual permits for separate storm sewers
six permits

Industrial sources - Individual permits - sparingly
General permits - most sources

Estimate of 6000 to 10,000 sources

DEQ STRATEGY

Issue general permit for construction activities

Use local planning entities to distribute general permit

Issue a different construction activities general permit to certain entities which would impose erosion control requirements upon construction activities under their review. For example: ODOT, BLM, USA

Issue up to 10 different general permits for other industrial categories.

DEQ TIME SCHEDULE

General permit for construction activities is ready to issue.

Start negotiating with local planning agencies to determine which ones will act as our agents in distributing the construction activities permit.

**CLASSES OF FACILITIES THAT DISCHARGE
STORM WATER ASSOCIATED WITH INDUSTRIAL ACTIVITY**

- o Facilities subject to National effluent limitation guidelines;
- o Facilities classified as Standard Industrial Codes (SIC) 24 (except 2434), 26 (except 265 and 267), 28, 29, 30, 311, 32, 33, 3441, and 373 (including lumber; paper; chemical; petroleum; rubber; leather tanning and finishing; stone, clay, glass, and concrete; metal; enameled iron and metal sanitary ware; and ship/boat manufacturers);
- o Facilities classified as SIC codes 10 through 14 (including active and inactive mining and oil and gas operations with contaminated storm water discharges, except for areas of coal mining operations which have been reclaimed and the performance bond has been released by the appropriate SMCRA authority, or non-coal mining operations which have been released from applicable State or Federal reclamation requirements after 30 days after publication of the final regulation);
- o Hazardous waste treatment, storage, or disposal facilities;
- o Landfills, land application sites, and open dumps that receive industrial wastes;
- o Recycling facilities (including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards (classified as SIC codes 5015 and 5093 only));
- o Steam electric power generating facilities (including coal handling sites);
- o Transportation facilities classified as SIC Codes 40, 41, 42, 44, and 45 (including vehicle maintenance, equipment cleaning, and airport de-icing areas);
- o Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of sewage (including land used for the disposal of sludge located within the confines of the facility) with a design flow of 1.0 mgd or more;
- o Construction activity (except for disturbances of less than 5 acres of total land area which are not part of a larger common plan of development or sale); and
- o For the following facilities, if materials are exposed to storm water: facilities classified under SIC codes 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 31 (except 311), 34 (except 3441), 35, 36, 37 (except 373), 38, 39, and 4221-25 (including food; tobacco; textile; apparel; wood kitchen cabinets; furniture; paperboard containers and boxes; converted paper/paperboard products; printing; drugs; leather; fabricated metal products; industrial and commercial machinery and computer equipment; electronic equipment; transportation equipment; measuring, analyzing, and controlling instruments and photographic, medical, and optical goods, and watches and clocks; miscellaneous; and certain warehousing and storage manufacturers).

Issue other industrial general permits by October 1991.

Three different drafts about ready for public review.

Receive applications between October 1991 and May 1992.

FEES AND RESOURCES

EPA provided no extra money for implementation of storm water permitting program.

Federal rules not adopted when DEQ was preparing budget.

New fee schedule does include fees for storm water permits.
(\$200 to get permit, \$100 annual fee)

Once fees start coming in, go to Emergency Board for authorization to hire some fee supported positions.

SUMMARY

The regulated municipalities are at various stages of putting together their part 1 application. There will be co-applicants

DEQ working on general permits and general permit applications to cover most industrial categories.

Issue general permits and distribute applications by October

Negotiate with local planning agencies this summer to implement the construction activities permit.

DEQ responding to phone calls and speaking engagements
Personally made 12 presentations to municipal & industrial groups since the first of the year. Next, 5 pm tonight

Next winter or spring go to E-Board for authorization to obtain fee supported staff for processing applications.

Charles K. Ashbaker
229-5235

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMORANDUM

DATE: May 22, 1991

TO: Environmental Quality Commission

FROM: Kent Ashbaker

SUBJECT: Agenda Item 1, June 13, 1991, Work Session
Background Discussion: New Federal Storm Water Rules
and Their Impact of the Department

On November 16, 1990, the EPA adopted new storm water rules which will affect the Department, some municipalities, and many industries throughout the state. A summary of the rules is attached as Attachment A.

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

These new rules affect all municipalities within the Tri-county area around Portland, the city of Eugene, the city of Salem, and several thousand industrial sources. A list of industrial categories covered by the rules is attached as Attachment B.

These rules and associated requirements are a portion of the National Pollutant Discharge Elimination System (NPDES) Permit program which has been delegated to DEQ for administration. A plan will have to be used which will allow implementation of the program with the least resources possible. No extra federal money was allocated.

SUMMARY OF THINGS TO BE DISCUSSED:

Why is storm water permitting being imposed now? Why wasn't it part of the NPDES Permit program from the beginning of the program in 1972?

What categories of sources will require permits? How many permits are anticipated?

What application options are provided by the rules?

What permitting options are provided by the rules?

What time schedules are imposed by the rules?

What is the Department's proposed strategy for dealing with this additional work load?

How is this going to be financed?

Memo to: Environmental Quality Commission
May 22, 1991
Page 2

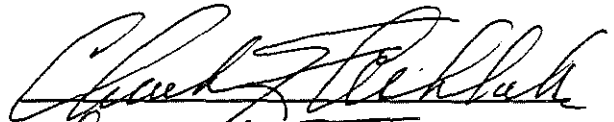
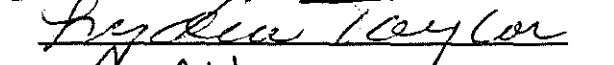

Could/should the Department refuse to implement the new rules
and leave it up to EPA?

Approved:

Section:

Division:

Director:

Report Prepared By: Charles K. Ashbaker

Phone: 229-5325

Date Prepared: May 22, 1991

IW\WC8\WC8368

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PERMIT APPLICATION REQUIREMENTS FOR STORM WATER DISCHARGES

FINAL REGULATION

A SUMMARY

United States Environmental Protection Agency

October 31, 1990

I. INTRODUCTION

Pollutants in storm water discharges from many sources are largely uncontrolled. The "National Water Quality Inventory, 1988 Report to Congress" (EPA, 1988), concluded that the States cite diffuse sources of water pollution as the leading cause of water quality impairment. In developing the National Water Quality Inventory, the States identified a number of major classes of diffuse sources of pollution, including, separate storm sewers, urban runoff, construction, waste disposal, and resource extraction, which correlate well with categories of discharges covered by the NPDES storm water program. Although many studies characterize these sources as a diffuse or nonpoint source of pollution, the majority of urban runoff and construction site runoff is discharged via separate storm sewers and, therefore, under the Clean Water Act (CWA), are discharges from point sources.

The National Urban Runoff Program (NURP), has shown that storm water from residential and commercial areas can contain a variety of pollutants including heavy metals, fecal coliforms, pesticides, suspended solids, nutrients and floatables. Runoff from industrial facilities can contain additional pollutants depending on the nature of industrial activity such as material management and waste disposal practices and activities which disturb soils. Other studies have shown that many storm sewers also receive illicit discharges of untreated non-storm water discharges, spills, and large amounts of improperly disposed wastes, particularly used oils. Removal of non-storm water discharges to storm sewers presents opportunities for dramatic improvements in the quality of storm water discharges.

II. SUMMARY OF THE RULE

This summary addresses amendments to 40 CFR 122 which establish NPDES permit application requirements for: storm water discharges associated with industrial activity; discharges from large municipal separate storm sewer systems (systems serving a population of 250,000 or more); and discharges from medium municipal separate storm sewer systems (systems serving a population of 100,000 or more, but less than 250,000).

III. DISCHARGES FROM LARGE AND MEDIUM MUNICIPAL SEPARATE STORM SEWER SYSTEMS

A. Defining Municipal Separate Storm Sewer System¹

A "large municipal separate storm sewer system" is a system serving a population of 250,000 or more. A "medium municipal separate storm sewer system" is a system serving a population of

100,000 or more, but less than 250,000. These systems include separate storm sewers:

- o located in one of the 173 cities with a population of 100,000 or more;
- o located in one of the 47 counties identified by EPA as having large populations in unincorporated, urbanized areas;
- o that are designated by the Director of the NPDES program as part of the large or medium system due to the interrelationship with the large or medium systems described above; or
- o that are located within the boundaries of a region defined by a storm water management regional authority and are designated by the Director of the NPDES program as part of a large or medium system.

B. Storm Water Permits for Municipalities

The CWA requires that NPDES permits for discharges from municipal separate storm sewer systems include: a requirement to effectively prohibit non-storm water discharges into the storm sewers; and controls to reduce the discharge of pollutants to the maximum extent practicable (including management practices, control techniques and system, design and engineering methods, and other provisions appropriate for the control of such pollutants.)

EPA or authorized NPDES States may issue system-wide or jurisdiction-wide permits covering all discharges from a municipal separate storm sewer system.

C. Permit Application Requirements²

The permit application requirements for discharges from municipal separate storm sewer systems have been designed to facilitate development of site specific permit conditions. The permit application requirements provide municipal applicants an opportunity to propose appropriate management programs to control pollutants in discharges from their municipal systems. This increases flexibility to develop permit conditions and ensures input from municipalities in developing appropriate controls.

A two-part application process for discharges from large and medium municipal separate storm sewer systems has been established.

1. Part 1 of the application includes:

- o General information (name, address, etc.);
- o Existing legal authority and any additional authorities needed;
- o Source identification information;
- o Discharge characterization including:
 - monthly mean rain and snow fall estimates;
 - existing quantitative data on volume and quality of storm water discharges;
 - a list of receiving water bodies and existing information on the impacts on receiving waters;
- o Field screening analysis for illicit connections and illegal dumping;
- o Characterization plan identifying representative outfalls for further sampling in Part 2;
- o Description of existing management programs to control pollutants from the municipal separate storm sewer and to identify illicit connections; and
- o Description of financial budget and resources currently available to complete Part 2.

2. Part 2 of the application includes:

- o Demonstration of adequate legal authority to control discharges, prohibit illicit discharges, require compliance, and carry out inspections, surveillance, and monitoring;
- o Source identification indicating the location of any major outfalls and inventorying the principal products or services provided by each facility discharging storm water associated with industrial activity to the municipal separate storm sewer;
- o Discharge characterization data including:
 - quantitative data from 5-10 representative locations in approved sampling plans;
 - for selected conventional pollutants and heavy metals, estimates of the annual pollutant load and event mean concentration of system discharges;

- proposed schedule to provide estimates of: seasonal pollutant loads; and the mean concentration for certain detected constituents in a representative storm event; and
- proposed monitoring program for representative data collection.

o Proposed management program including descriptions of:

- structural and source control measures that are to be implemented to reduce pollutants in runoff from commercial and residential areas including:
 - maintenance activities;
 - planning procedures to develop, implement, and enforce controls for areas of new development and significant redevelopment;
 - practices for operating and maintaining public streets and highways;
 - procedures to assure flood management projects assess impacts on water quality;
 - program to monitor pollutants in runoff from operating or closed municipal landfills (or other facilities for municipal waste); and
 - program to reduce pollutants in discharges associated with the application of pesticides, herbicides, and fertilizer;
- program to detect and remove illicit discharges including:
 - program to implement and enforce an ordinance or order;
 - procedures to conduct on-going field screening activities;
 - procedures to be followed to investigate potential illicit discharges;
 - procedures to prevent, contain, and respond to spills;
 - program to promote, publicize, and facilitate public reporting;
 - educational activities for management of used oil and toxic material; and
 - controls to limit infiltration of seepage from sanitary sewers;

- program to monitor and control pollutants from municipal landfills; hazardous waste treatment, disposal, and recovery facilities; SARA Section 313, Title III facilities; and other priority industrial facilities including:
 - priorities and procedures for inspection and enforcement;
 - monitoring program; and
 - program to implement and maintain structural and non-structural BMPs;
- program to control pollutants in construction site runoff including:
 - site planning requirements;
 - non-structural and structural management practices;
 - procedures for identifying priorities for inspecting sites and enforcement actions;
 - educational and training measures for construction site operators.
- o Estimated reduction in loadings of pollutants as a result of the management program; and
- o Fiscal analysis of necessary capital and operation and maintenance expenditures.

D. Effective Prohibition of Non-Storm Water Discharges³

For many municipalities, a first priority for reducing pollutants from municipal separate storm sewer systems is to effectively prohibit non-storm water discharges to their municipal separate storm sewer system. The permit application process implements this effective prohibition by establishing requirements for a field analysis to detect illicit connections and illegal dumping. In addition, applicants are required to submit a proposed program to control illicit connections and illegal dumping as part of their proposed management programs.

E. Application Deadlines⁴

For large municipal separate storm sewer systems, Part 1 must be submitted within 12 months of the date of publication of the final rule. The Director will then have 90 days from receipt of Part 1 to approve or deny a sampling plan. Part 2 must be submitted within 24 months of the date of publication of the final rule. Medium municipal separate storm sewer systems must submit Part 1 within 18 months from the date of publication of the final rule. The Director will have 90 days from receipt to

approve or deny a sampling plan. Part 2 must be submitted within 30 months of the date of publication of the final rule.

IV. REQUIREMENTS FOR STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

A. Industries Covered by Regulation⁵

The term "storm water discharge associated with industrial activity" means the discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant including:

- o Facilities subject to National effluent limitation guidelines;
- o Facilities classified as Standard Industrial Codes (SIC) 24 (except 2434), 26 (except 265 and 267), 28 (except 283), 29, 311, 32 (except 323), 33, 3441, and 373. (These codes include lumber; paper mills; chemical; petroleum; rubber; leather tanning and finishing; stone, clay, and concrete; metal; enameled iron and metal sanitary ware; and ship/boat manufacturing facilities);
- o Facilities classified as SIC codes 10 through 14 including active and inactive mining and oil and gas operations with contaminated storm water discharges, except for areas of coal mining operations which have been reclaimed and the performance bond has been released by the appropriate SMCRA authority, or non-coal mining operations which have been released from applicable State or Federal reclamation requirements after 30 days after publication of the final regulation (see the description of special application provisions for mining operations and oil and gas operations below);
- o Hazardous waste treatment, storage, or disposal facilities;
- o Landfills, land application sites, and open dumps that receive industrial wastes;
- o Recycling facilities classified as SIC codes 5015 and 5093. (These codes include metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards);
- o Steam electric power generating facilities (including coal handling sites);

- o Vehicle maintenance, equipment cleaning, or airport de-icing areas of railroad, mass transit, school bus, trucking and courier services, postal service, water transportation, and airport facilities, and petroleum bulk stations;
- o Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of sewage (including land used for the disposal of sludge located within the confines of the facility) with a design flow of 1.0 mgd or more or required to have an approved pretreatment program. This does not include farm lands, domestic gardens or lands used for beneficial reuse of sludge which are not physically located in the confines of the facility;
- o Construction activity (except for disturbances of less than 5 acres of total land area which are not part of a larger common plan of development or sale); and
- o Facilities where materials are exposed to storm water classified under SIC codes 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, and 4221-25 (These codes include food; tobacco; textile; apparel; wood kitchen cabinets; furniture; paperboard containers and boxes; converted paper/paperboard products; printing; drugs; leather; fabricated metal products; industrial and commercial machinery and computer equipment; electronic equipment; transportation equipment; measuring, analyzing, and controlling instruments and photographic, medical, and optical goods, and watches and clocks; glass; and certain warehousing and storage manufacturing facilities).

Areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots are generally excluded from the definition of storm water discharge associated with industrial activity, as long as the drainage from the excluded areas is not mixed with storm water drained from areas with industrial activity.

B. Industrial Storm Water Permitting Strategy

EPA estimates that about 100,000 facilities are addressed by the regulatory definition of "storm water discharges associated with industrial activity". The large number of facilities addressed will place correspondingly large administrative burdens on EPA and States with authorized NPDES programs to issue and administer permits for these discharges. To provide a reasonable and rational framework to addressing this permitting task, EPA is developing a strategy for permitting storm water discharges associated with industrial activity. In developing this strategy, the Agency recognizes that the CWA provides flexibility

in the manner in which NPDES permits are issued⁶, and intends to use this flexibility in designing a workable and reasonable permitting system that emphasizes reduction of risk to human health and aquatic resources. The strategy is intended to establish a framework for developing permitting priorities based on reduction of risk to human health and aquatic resources, and includes the following four tier set of priorities for issuing permits over time:

- o Tier I - Baseline Permitting: One or more general permits⁷ will be developed initially to cover the majority of storm water discharges associated with industrial activity;
- o Tier II - Watershed Permitting: Facilities within watersheds shown to be adversely impacted by storm water discharges associated with industrial activity will be targeted for individual or watershed-specific general permits.
- o Tier III - Industry-Specific Permitting: Specific industry categories will be targeted for individual or industry-specific general permits; and
- o Tier IV - Facility-Specific Permitting: A variety of factors will be used to target specific facilities for individual permits.

The industrial storm water permitting strategy also calls for the development of State storm water permitting plans as a mechanism to provide public participation and ensure appropriate implementation of storm water permitting activities within the various States. State strategies will also provide a foundation from which State storm water management programs required under section 402(p)(6) of the Clean Water Act can be developed.

C. Relationship of Strategy to Permit Application Requirements

The industrial storm water permitting strategy described above identifies several permitting approaches that the Agency anticipates will be used in addressing storm water discharges associated with industrial activity. The NPDES regulatory scheme provides three potential options for applying for permit coverage for storm water discharges associated with industrial activity: (1) individual permit applications; (2) group applications; and (3) notice of intent requirements developed for general permit coverage. Notices of intent will generally need to include only information such as the type of industry, location and name of receiving waters.

The following discussion summarizes regulatory requirements for individual permit applications and group applications. These requirements apply to discharges that are not covered by a general permit. Where a general permit has been issued for a

discharge, individual or group applications are not required, as the general permit establishes alternative (and typically simplified) requirements for obtaining coverage under the general permit.

D. Individual Application Requirements for Storm Water Discharges Associated with Industrial Activity⁹

1. Generally Applicable Requirements (See Parts 2 and 3 below with Regard to Construction, Mining, and Oil and Gas Operations)

Individual application requirements for most storm water discharges associated with industrial activity are comprised of Form 1 (general information) and Form 2F (storm water discharges). The Form 2F requirements include:

- o Topographic map showing on-site drainage;
- o Estimate of impervious surfaces and the total area drained by each outfall;
- o Narrative description of material management practices and control measures;
- o Certification that separate storm water outfalls have been evaluated for non-storm water discharges;
- o History of leaks and spills; and
- o Test Data Parameters
 - Any pollutant with effluent guideline limitation;
 - Any pollutant in NPDES permit for process discharge;
 - Oil and grease, pH, TOC, BOD₅, COD, TSS, Nitrogen, Phosphorus;
 - Certain pollutant(s) known to be in the discharge;
 - Flow measurement(s) or estimate(s);
 - Date(s) and duration of storm event(s).

2. Application Requirements for Construction Activities⁹

Construction facilities which discharge storm water associated with industrial activity are not required to submit sampling data in permit applications. Instead, individual application requirements for these facilities include, in addition to Form 1:

- o Narrative description of the construction activity;
- o Total area of the site and area to be excavated under the permit;

- o Proposed measures to control pollutants in storm water discharges during and after construction operations;
- o Estimate of runoff coefficient and increase in impervious areas after construction; and
- o Name of receiving water.

3. Application Requirements for Mining Operations and Oil and Gas Operations¹⁰

Oil and gas facilities (active or inactive) are not required to submit a permit application unless the facility had a discharge of a reportable quantity¹¹ for which notice is required under CERCLA or CWA at any time since three years before the publication of the rule; or such facility has a discharge which contributes to a violation of a water quality standard.

Mining operations (active or inactive) are not required to submit permit applications unless the storm water discharge has come into contact with any overburden, raw material, intermediate or finished products, byproducts, or waste products located on site. Areas of coal mining operations which have been reclaimed and the performance bond has been released by the appropriate SMCRA authority, or non-coal mining operations which have been released from applicable State or Federal reclamation requirements after 30 days after publication of the final regulation are not subject to permitting requirements.

E. Group Application Requirements¹²

Certain facilities which discharge storm water associated with industrial activity have the option of participating in a group application in lieu of submitting a complete individual application. If dischargers are part of the same effluent guideline subcategory or are sufficiently similar as to be appropriate for general permit coverage, they may submit a group application. Group applications consists of two parts:

Part 1 - Identifies participants and includes:

- o A summary of each participant's industrial activities;
- o An explanation of why the participants are sufficiently similar to make use of the group application;
- o A list of significant materials stored outside by participants and material management practices; and
- o A list of 10 percent of the dischargers that will submit test data in Part 2.

Part 2 - 10 percent of discharges must submit test data (a minimum of 10 and a maximum of 100 dischargers with either 2 from each precipitation zone¹³ represented, or one discharger from each precipitation zone in which nine or fewer members of the group are located).

F. Storm Water Discharges Associated with Industrial Activity, to Large and Medium Municipal Separate Storm Sewer Systems¹⁴

In addition to submitting permit applications, operators of storm water discharges associated with industrial activity which discharge through large or medium municipal separate storm sewers are required to submit to the operator of that municipal storm sewer: the name of the facility; a contact person and phone number; the location of the discharge; and a description of the principal products or services provided by the facility (including any SIC code). Such notice must be given no later than 180 days after the date of publication of the rule or 180 days prior to commencing an activity that could result in a storm water discharge associated with industrial activity.

G. Application Deadlines¹⁵

Individual applications for storm water discharges associated with industrial activity must be submitted within 12 months of the date of publication of the rule.

Part 1 of the group application must be submitted within 120 days of the date of publication of the rule. The Director will then have 60 days to approve or deny participation in the group. Part 2 must then be submitted no later than one year after the date of approval of Part 1. Facilities that are rejected as group members have 12 months from the date they received notice of rejection to file individual permit applications. Facilities may add on to group applications within 15 months of the date of publication of the rule at the Director's discretion but only upon a showing of good cause.

Where an applicable general permit has been issued, the general permit will establish a date for when a discharger must submit a notice of intent to be covered by the general permit. Dischargers obtaining coverage under a general permit are not required to submit an individual permit application or participate in a group application for the discharge covered by the general permit.

1. 122.26(b)(4) and 122.26(b)(7)
2. 122.26(d)
3. 122.26(b)(2), 122.26(b)(5), 122.26(d)(1)(iii)(a), 122.26(d)(1)(iv)(D), 122.26(d)(1)(iv)(E)(1), 122.26(d)(1)(v)(B), 122.26(d)(2)(i)(B), 122.26(d)(2)(i)(C), 122.26(d)(2)(iii)(A), and 122.26(d)(2)(iv)(B)
4. 122.26(e)
5. 122.26(b)(14)
6. The court in NRDC v. Train, 396 F.Supp. 1393 (D.D.C. 1975) aff'd, NRDC v. Costle, 568 F.2d 1369 (D.C.Cir. 1977), has acknowledged the administrative burden placed on the Agency by requiring individual permits for a large number of storm water discharges. In this decision, the court recognized EPA's discretion to use certain administrative devices, such as area permits or general permits to help manage its workload. In addition, the court recognized flexibility in the type of permit conditions that are established, including requirements for best management practices.
7. A general permit is a permit that covers discharges from more than one facility within a State. General permits are either issued by EPA or, in States with authorized NPDES programs, by the State.
8. 122.26(c)
9. 122.26(c)(1)(ii)
10. 122.26(a)(2) and 122.26(c)(1)(iii) and (iv)
11. Reportable quantities for hazardous substances are defined at 40 CFR 117.21 and 40 CFR 302.6. The reportable quantity for oil is defined at 40 CFR 110.6.
12. 122.26(c)(2)
13. The storm water permit application regulation defines nine precipitation zones for the purposes of developing and submitting group applications.
14. 122.26(a)(4)
15. 122.26(e)

**CLASSES OF FACILITIES THAT DISCHARGE
STORM WATER ASSOCIATED WITH INDUSTRIAL ACTIVITY**

- o Facilities subject to National effluent limitation guidelines;
- o Facilities classified as Standard Industrial Codes (SIC) 24 (except 2434), 26 (except 265 and 267), 28, 29, 30, 311, 32, 33, 3441, and 373 (including lumber; paper; chemical; petroleum; rubber; leather tanning and finishing; stone, clay, glass, and concrete; metal; enameled iron and metal sanitary ware; and ship/boat manufacturers);
- o Facilities classified as SIC codes 10 through 14 (including active and inactive mining and oil and gas operations with contaminated storm water discharges, except for areas of coal mining operations which have been reclaimed and the performance bond has been released by the appropriate SMCRA authority, or non-coal mining operations which have been released from applicable State or Federal reclamation requirements after 30 days after publication of the final regulation);
- o Hazardous waste treatment, storage, or disposal facilities;
- o Landfills, land application sites, and open dumps that receive industrial wastes;
- o Recycling facilities (including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards (classified as SIC codes 5015 and 5093 only));
- o Steam electric power generating facilities (including coal handling sites);
- o Transportation facilities classified as SIC Codes 40, 41, 42, 44, and 45 (including vehicle maintenance, equipment cleaning, and airport de-icing areas);
- o Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of sewage (including land used for the disposal of sludge located within the confines of the facility) with a design flow of 1.0 mgd or more;
- o Construction activity (except for disturbances of less than 5 acres of total land area which are not part of a larger common plan of development or sale); and
- o For the following facilities, if materials are exposed to storm water: facilities classified under SIC codes 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 31 (except 311), 34 (except 3441), 35, 36, 37 (except 373), 38, 39, and 4221-25 (including food; tobacco; textile; apparel; wood kitchen cabinets; furniture; paperboard containers and boxes; converted paper/paperboard products; printing; drugs; leather; fabricated metal products; industrial and commercial machinery and computer equipment; electronic equipment; transportation equipment; measuring, analyzing, and controlling instruments and photographic, medical, and optical goods, and watches and clocks; miscellaneous; and certain warehousing and storage manufacturers).

Approved _____
Approved with corrections _____
Corrections made _____

MINUTES ARE NOT FINAL UNTIL APPROVED BY THE EOC

ENVIRONMENTAL QUALITY COMMISSION

Minutes of the Special Phone Conference Update on Legislation
May 14, 1991

The Environmental Quality Commission legislative update telephone conference meeting was convened at about 4:00 p.m. on Tuesday, May 14, 1991. Participating in the conference call were Chair Bill Hutchison, Vice Chair Emery Castle, Commissioners Henry Lorenzen, Director Fred Hansen, and Harold Sawyer, Steve Greenwood, Wendy Sims and Brian Finneran of the Department staff, and Shelley McIntyre of the Attorney General's office. Commissioner Whipple was added to the conference call shortly after it began. The public could participate by speaker phone in Conference Room 3b of the Department of Environmental Quality Offices at 811 S. W. 6th Avenue in Portland, Oregon. Several people were present representing the public.

Director Hansen introduced the first topic of discussion which was consideration of the Proposed Adoption of Amendments to the Industrial Volatile Organic Compound (VOC) Rules for the Portland Non-Attainment Area. This item was considered at the April 26, 1991, EQC meeting, and was deferred until the May 14, 1991, conference call to allow the Department time to meet with affected industries on the proposed rules.

Brian Finneran, of the Air Quality Staff, explained that the Department had met with the industries on two occasions. A summary of the major issues, and the resolution proposed was faxed to the Commission members this morning. Mr. Finneran reviewed the major issues, and Department Response as follows:

1. Sources should be given time to comply through compliance schedules established by permit modification, without enforcement action.

Answer: The Department intends to issue compliance schedules, and recommends exempting affected sources by rule for a 60 day period.

2. The Department is not required to adopt a rule requirement to apply RACT (Reasonably Available Control Technology) to major sources not covered by federal CTGs (Control Technology Guidance document).

Answer: Based on written confirmation of this requirement from EPA, the Department does not recommend its deletion.

3. Special provisions in the VOC rules should not require EPA approval through "source-specific SIP revisions".

Answer: EPA has confirmed these are required, and therefore the Department does not recommend deleting this requirement.

In response to a question from Chair Hutchison, Mr. Finneran stated that the industries had accepted the recommendations as presented. In response to a question from Chair Hutchison, Shelley McIntyre noted that she is handling litigation that is directly related to this issue. She has noted in her answer in the case that the Commission would be considering the matter. Further, she indicated that the litigation is not driving the action proposed but that action by the Commission would be helpful in the litigation.

Pat Parenteau, representing Boeing, noted that the Department had been responsive to Boeing's request that a compliance schedule be incorporated in the permit. He stated that it will be necessary to build into the compliance schedule the time that it will take EPA to approve alternative emission limits.

Director Hansen noted that an argument has been advanced that since the rule adopted by the Commission several years ago was not in compliance with federal law and was therefore not appropriate, there should be immediate compliance with the new rule upon promulgation. The Department believes that it is legitimate for Oregon sources to rely on the rule adopted by the Commission until it is changed. The Department also believes it is important for sources to move rapidly to achieve compliance with the new rule. Therefore, the Department is proposing that if a specific compliance schedule is not agreed to within 60 days, then the source will be in violation of the new rule. This is an incentive to get a compliance schedule in place in short order. Director Hansen concluded that the Department is asking the Commission to adopt the rules with the amendments proposed.

Mr. Finneran then reviewed a number of minor issues that were raised and the changes (clarifications) recommended by the Department in response as summarized in the materials faxed to the Commission.

Teresa Perone, representing Textronix, noted for the record that they have a question as to whether the PSEL (plant site emission limit) is federally enforceable, and are awaiting resolution of the question.

David Paul, representing the Sierra Club, urged the Commission to reject the Department recommendation under the minor issues to add three months to the time allowed for RACT analysis. He further stated that the Commission should pass the rule, but anything less than immediate compliance would not make his client happy.

Mr. Finneran responded that since there are no federal guidelines for how to develop RACT for non-regulated sources, there may be some difficulty in completing the process. Therefore, the Department recommended the revision to give the Department the ability to approve an additional 3 months "for good cause".

EQC Telephone Conference Minutes
May 14, 1991
Page 3

In response to a question from Chair Hutchison, Wendy Sims stated that the proposed rule addresses requirements of the 1990 Clean Air Act as well as requirements that were not properly addressed from the earlier legislation. Commissioner Castle noted that the Department's position seemed reasonable. Commissioners Lorenzen and Whipple agreed.

It was MOVED by Commissioner Castle that the proposed Rules, as amended by the Department's recommendations, be adopted. The motion was seconded by Commissioner Lorenzen and unanimously approved by the four members participating in the conference call.

Director Hansen reported that the Department is in the 10th day of presentations before the Ways and Means Subcommittee. To date, the Department has completed an overview, and is almost through with the Water Quality Program discussions. A public hearing on the budget has also been held. Discussions are focusing on the substance of the issues.

With respect to the Air Fee bill (HB 2175), there will be a work session to mark up the bill. A minority report is expected. The American Electronics Association is supporting the funding levels in the bill. The Northwest Pulp and Paper Association opposes the funding levels. There is some support from industry for the fees on woodstoves and a start of fees on automobiles.

Commissioner Whipple asked about the Science Advisory Board bill. Chair Hutchison noted that both he and Vice Chair Castle had testified on the bill. They had provided detail on the advisory committee process used by the Commission and Department. The bill had been tabled.

Director Hansen noted that most other bills were through one house and either in the other house or before ways and means. The only Commission bill that was tabled so far was the Lab Certification proposal. He also noted that there had been meetings with the Department of Forestry and the Oregon Forest Industries Council on the forestry bill (SB 1125). Few differences are left, and language is being worked out.

Finally, Director Hansen noted that FERC had adopted a rule on May 8 that appears to ignore conditions of state certification under Section 401 of the Clean Water Act. The Department intends to appeal the FERC rule determination.

There was no further business, and the telephone conference meeting was adjourned at 4:55 p.m.

WORK SESSION
REQUEST FOR EQC DISCUSSION

Meeting Date: June 13, 1991
Agenda Item: 2
Division: Water Quality
Section: Municipal Wastewater

SUBJECT:

Proposed New General Conditions, To Be Attached To All National Pollutant Discharge Elimination System (NPDES) Permits

PURPOSE:

The purpose of this agenda item is to solicit Commission comment on policy issues surrounding proposed changes.

ACTION REQUESTED:

- Work Session Discussion
 - General Program Background
 - Potential Strategy, Policy, or Rules
 - Agenda Item ___ for Current Meeting
 - Other: (specify)

 - Authorize Rulemaking Hearing
 - Adopt Rules
 - Proposed Rules
 - Rulemaking Statements
 - Fiscal and Economic Impact Statement
 - Public Notice
- Attachment ___
Attachment ___
Attachment ___
Attachment ___



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696



upset provision" and the "single operational upset (event) provision". It is for these two conditions that the Department is requesting comment or direction from the Commission.

AUTHORITY/NEED FOR ACTION:

- Required by Statute: _____ Attachment _____
 Enactment Date: _____
 Statutory Authority: _____ Attachment _____
 Pursuant to Rule: 40 CFR 122.41 Attachment B
 Pursuant to Federal Law/Rule: _____ Attachment _____

 Other: _____ Attachment _____

 Time Constraints: (explain)

Numerous permittees have indicated that they feel these revised conditions are necessary to allow an affirmative defense where permit limits are exceeded, but extenuating circumstances exist. These permittees have requested that the new general conditions be added to permits as soon as possible.

DEVELOPMENTAL BACKGROUND:

- Advisory Committee Report/Recommendation Attachment _____
 Hearing Officer's Report/Recommendations Attachment _____
 Response to Testimony/Comments Attachment C
 Prior EQC Agenda Items: (list) Attachment _____

 Other Related Reports/Rules/Statutes: Attachment _____

 Supplemental Background Information Attachment D

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

The addition of the regulatory upset and single operational event conditions are proposed by the Association of Oregon Sewerage Agencies (AOSA). As the Department understands it, AOSA's concerns are not with the Department's enforcement actions, but rather with the potential for increased liability from a third party lawsuit.

Meeting Date: June 13, 1991
Agenda Item:
Page 4

Under the federal Clean Water Act, any person may sue a permittee for any violation of an NPDES permit. Federal law also allows for two very limited provisions that reduce or eliminate liability. These provisions are known as the regulatory upset provision and the single operational upset (event) provision. In order for these affirmative defenses to be available to the permittee, the two conditions requested have to be in the permit. AOSA is requesting that, for lawsuits filed under the Clean Water Act, they also have available to them the limited defenses allowed under the Clean Water Act. Oregon law does not provide for third party lawsuits.

These two new conditions would formalize the way that the Department currently approaches water quality exceedances. These broad categories of exceedances are: (1) exceedances that are truly beyond the reasonable control of the permittee (warning may be issued, civil penalties are not assessed); (2) exceedances that are the result of carelessness, but not deliberate intent, at facilities that have an overall good record of compliance (reduced civil penalties or just a warning); and (3) those exceedances caused by deliberate intent or where recurring similar violations occur (maximum enforcement effort). The regulatory upset provision could apply for exceedances as described in (1); the single operational upset (event) could apply for violations described in (2); and neither condition would apply to (3).

Regulatory Upset Provision (Condition B.4)

The regulatory upset provision (Condition B.4 in Attachment C) states that permit limit exceedances that result from events truly beyond the reasonable control of a permittee are not considered violations. Operator error, improperly designed treatment facilities, and lack of preventative maintenance are not beyond the reasonable control of the permittee, and exceedances resulting from these causes would be considered violations. Examples of an event beyond the reasonable control of the permittee would be a bolt of lightning hitting a pump station, or a region wide power outage. The burden of proof for whether an event was beyond reasonable control rests with the permittee. Prompt reporting of the exceedances and remedial actions are also required for a permittee to invoke this defense.

Although the existing general conditions have allowed no defense based on the regulatory upset concept, the Department has always considered the cause of a permit exceedance before taking enforcement action. Typically, each permit exceedance

is evaluated by staff as to why it happened, whether the permittee should have been able to avoid the exceedance, what type of follow up action the permittee took, what the chances are of recurrence of the exceedances, and whether remedial action is required by the permittee. [Attachment D is the Department's worksheet used for enforcement referrals. See page 3, item 6.] For exceedances that appeared to be caused by events beyond the reasonable control of the permittee, the Department has at most issued a warning through a Notice of Noncompliance or Notice of Violation and Intent to Assess Civil Penalty.

Single Operational Upset (Event) Provision (Condition B.5)

This new condition covers exceedances that do not meet the requirements of the regulatory upset condition, but where, for example, the operator may just have been careless. Only normally well-operated facilities with a good record of compliance would qualify under this provision. This condition would allow a reduction in liability, in that fewer violations would be cited, but the permittee would still be in violation of the permit. This provision would also remove the permittee from the possibility of criminal prosecution. Violations caused by inadequate treatment facilities would not qualify for the reduction in liability. Violations caused by intentional acts or omissions would not qualify for this reduction in liability, either.

When a process upset in the wastewater treatment facility occurs, many times more than one pollutant exceeds limits. For example, if the aerators in a sewage treatment plant were accidentally turned off overnight, there would probably be a violation of Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) limits, and maybe the fecal coliform limit also. The Clean Water Act allows these violations to be considered only one violation (that is, one event) as opposed to three violations (that is, three pollutants exceeded standards), provided there is a permit condition allowing it, and provided the cause of the violation meets the requirements for the single operational event. However, each separate day of the exceedances, if they should last more than one day, would be considered a separate violation.

The Department now lists each individual pollutant and each day of violation in enforcement actions, but does not issue a separate civil penalty for the multiple pollutants.

Rather, the number of pollutants, the relative amount above permit standards, the toxicity of the effluent, and the impact on the receiving stream are all factored together in determining how serious the violation is, and what is an appropriate enforcement response.

Response of Environmental Community

Two members of the Northwest Environmental Defense Committee submitted testimony opposing these conditions. The objections raised are discussed in some detail in Attachment C, with the Department's response. In summary, the objections are to "relaxing" existing Department permits, and to limiting the liability and increasing the area of potential dispute in third party lawsuits.

The Department does not expect the proposed changes to significantly affect either the workload or ability to enforce where permit violations are found. The Department agrees that there may be some impact on third party lawsuits. The proposed changes remove an unfair advantage that now exists for third party litigants.

PROGRAM CONSIDERATIONS:

These proposed permit changes are not expected to have any impact on the timing or amount of civil penalties issued. The Department will continue to investigate the causes of exceedances, and factor that into enforcement decisions. However, there may be some impact on enforcement actions as follows:

1. The Department will no longer issue Notices of Noncompliance, nor prepare enforcement referrals, for exceedances that the Department agrees were truly beyond the reasonable control of the permittee. Such exceedances will no longer be considered violations. This will result in a workload reduction, both for Regional staff and the Enforcement Section.
2. It is possible that permittees may be more likely to contest civil penalties, arguing that the exceedances were beyond their control, even though the Department does not agree with that assessment. However, the burden of proof rests with the permittee, not the Department. Courts have generally shown deference to regulatory agency judgement where there are conflicts

over technical matters. The Department does not expect that there will be a significant workload increase or impairment of enforcement capabilities through increased appeals.

3. There may be an increase in workload resulting from arguments and documentation from permittees regarding whether or not the violation was beyond reasonable control. However, the Department currently seeks and evaluates such arguments and supporting documents when there is an exceedance. If there is an increase in workload, it is not expected to be significant.
4. It is possible that permittees may request written confirmation that a particular event met the regulatory upset requirements. However, the Department does not expect these events to be common. The increase of workload, if any, is not expected to be significant.

In the unlikely event that these two general conditions unexpectedly create difficulties with Department enforcement actions, the two conditions can be amended or deleted at any time.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

1. The Department could revise and update the general conditions as recommended.
2. The Department could revise and update the general conditions as recommended, but exclude the regulatory upset and single operation upset (event) conditions.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends that the general conditions be revised as proposed. The changes are not expected to interfere or change how the Department carries out the enforcement of NPDES permits. The addition of the two conditions to limit liability are fair and reasonable and provided for in the Clean Water Act.

Meeting Date: June 13, 1991
Agenda Item:
Page 8

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE
POLICY:

The proposed changes are consistent with existing Department practices and policies regarding enforcement actions. In addition, by removing an unfair advantage for third party litigants, the proposed changes are consistent with Department policy in remaining neutral in federal third party lawsuits.

ISSUES FOR COMMISSION TO RESOLVE:

1. Should the Department allow permittees limited liability protection as provided for in the Clean Water Act?

INTENDED FOLLOWUP ACTIONS:

Following the Commission's direction, the general conditions will be revised as appropriate and sent to EPA for review and approval. At the conclusion of EPA's review, the Department intends to modify NPDES permits to include the revised general conditions.

Approved:

Section: Barbara A. Burton
Division: Regulatory
Director: Jul Hansen

Report Prepared By: Barbara Burton

Phone: 229-6099

Date Prepared: May 20, 1991

BAB:crw
MW\WC8\WC8409
May 28, 1991

NPDES GENERAL CONDITIONS

SECTION A. STANDARD CONDITIONSEXPLANATION1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of Oregon Revised Statutes (ORS) 468.720 and is grounds for enforcement action; for permit termination, ~~;~~ suspension, or modification; or for denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions

~~*[In-addition-to-the-criminal-penalties-specified above;]*~~ Oregon Law (ORS 468.140) ~~*[also]*~~ allows the Director to impose civil penalties up to \$10,000 per day for violation of a ~~*[the]*~~ term~~*[s]*~~, ~~*[or]*~~ condition~~*[s]*~~, or requirement of a permit.

In addition, Oregon Law (ORS 468.990) classifies a willful or negligent violation of the terms of a permit or failure to get a permit as a misdemeanor and a person convicted thereof shall be punishable by a fine of not more than \$25,000 or by imprisonment for not more than one year, or by both. Each day of violation constitutes a separate offense.

These are minor language changes. The civil penalty authority is most commonly used by the Department, and is therefore put first in this condition.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in ~~*[brackets]*~~ and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in ~~*[brackets]*~~ and new material underlined.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. In addition, upon request of the Department, the permittee shall correct any adverse impact on the environment or human health resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

The language in the first sentence, as modified, reads identically to 40 CFR, part 122.41(d). The Department believes the content of the original sentence still is useful to have in the permit. The Department proposes to add the words "upon request of the Department" to the second sentence, however.

4. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and have the permit renewed. The application ~~[should]~~ shall be submitted at least 180 days before the expiration date of this permit.

This makes submission of the application more than 180 days prior to expiration of a requirement, rather than a recommendation.

The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

5. Permit Actions

This permit may be modified, suspended, revoked and reissued, or terminated for cause including, but not limited to, the following:

- a. Violation of any term[s], ~~[or]~~ condition[s], or requirement of this permit, a rule, or a statute;

The words "revoked and reissued" are part of the federal language on this issue as stated in 40 CFR, part 122.41(f). The word "material" is recommended instead of the word "relevant" because all relevant information may not be important or material to determining whether or not the permit should be issued or what conditions should be included in it. It needs to be stated that the

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in ~~[brackets]~~ and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in ~~[brackets]~~ and new material underlined.

EXPLANATION

- b. Obtaining this permit by misrepresentation or failure to disclose fully all material [~~relevant~~] facts; or
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

The filing of a request by the permittee for a permit modification or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

6. Toxic Pollutants

The permittee shall comply with any applicable effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

federal language on this matter in 40 CFR, part 122.64 uses the term relevant, not material.

40 CFR, part 122.41 requires that certain conditions be placed or referenced in all NPDES permits. This is one of those conditions and is cited in 40 CFR, part 122.41(a)(1). The Department can exclude conditions that are required by federal regulations if the omission results in greater stringency.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in [~~brackets~~] and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in [~~brackets~~] and new material underlined. A-3

7. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege[s; ~~nor does it authorize any injury to private property or any invasion of personal rights; nor any violation of federal, state or local laws or regulations~~].

The first part of the sentence, "the issuance of this permit does not convey any property rights of any sort, or any exclusive privileges," is a direct quote from 40 CFR, part 122.41(g) and is required to be in the permit. The remaining part of the sentence comes from 40 CFR, part 122.5(c). Part 122.5(c) is a rule intended to apply to NPDES permits, but does not specify that its language be included in the permit as a condition. The Department believes that it is redundant to have a requirement in both rule and in the permit and, as the federal rules do not mandate that it be specifically stated in the permit, it should be deleted from the General Conditions.

8. Permit References

Except for effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and standards for sewage sludge use or disposal established under Section 405(d) of the Clean Water Act, all rules and statutes referred to in this permit are those in effect on the date this permit is issued.

This is added to clarify that, if a rule or statute referred to in the permit is amended during the term of the permit, the original rule or statute applies. As necessary, the Department will modify permits to include amended rules or statutes. The sections of the Clean Water Act referred to for toxics and sludge are exceptions. By law, permittees are required to comply with the most recent standards without permit modification being required.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in [brackets] and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in [brackets] and new material underlined. A-4

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

EXPLANATION

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes ~~[effective performance, -adequate -funding, -adequate -operator staffing -and -training, -and]~~ adequate laboratory ~~[and process]~~ controls, ~~[including]~~ and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

This language has been altered to conform to that specified in 40 CFR, part 122.41(e). The Department does not believe the new language is a significant change from the original condition.

2. Duty to Halt or Reduce Activity

For industrial or commercial facilities, upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

The last sentence is a direct quote from 40 CFR, part 122.41(c). The first sentence has been altered to make clear that this condition does not apply to sewage treatment facilities. It is not practicable to require municipalities to stop "producing" sewage because of a violation at the sewage treatment plant.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in ~~[brackets]~~ and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in ~~[brackets]~~ and new material underlined. A-5

3. Bypass of Treatment Facilities

a. Definitions

- (1) "Bypass" means intentional diversion of waste streams from any portion of the ~~[conveyance system or]~~ treatment facility ~~[works as defined in ORS 454.010]~~ ~~[facility]~~. The term "bypass" does not include nonuse of singular or multiple units or processes of a treatment works when the nonuse is [either] insignificant [or not detrimental] to the quality and/or quantity of the effluent produced by the treatment works. The term "bypass" does not apply if the diversion does not cause effluent limitations to be exceeded, provided the diversion is to allow essential maintenance to assure efficient operation.

- (2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities or treatment processes which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Prohibition of bypass.

- (1) Bypass is prohibited ~~[and the Director may take enforcement action against a permittee for bypass,]~~ unless:

This language is essentially as described in 40 CFR, part 122.41(m). The word "intentional" is part of the federal rule and is proposed to be added. The second sentence in subparagraph (1) is not part of the federal language. This sentence is proposed because certain components of a sewage treatment plant are needed only during certain events such as times of high flow during the winter. During the summer, these components are not only not necessary, but may, in fact, hinder the efficiency of the treatment processes. This sentence was added to allow by-passing of these components when their nonuse is insignificant to the effectiveness of the wastewater treatment. The last sentence is a paraphrase of a section of this condition, and is added here to clarify the definition of a bypass.

The Department recommends the words "conveyance system or" be deleted because the term "conveyance system" is not part of the federal regulation.

Subparagraph (1) was altered to remove unnecessary language. Subparagraph (2) includes the term "treatment processes" which is not part of the federal regulation. This is included because of the occasional need to bypass certain portions of treatment works not for the purpose of protecting them from permanent damage, but to maintain their biological treatment capabilities. For instance, high flows into a treatment facility can wash the

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in ~~[brackets]~~ and new material under-
d. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in ~~[brackets]~~ and new material underlined. A-6

EXPLANATION

- (a) Bypass was ~~[avoidable]~~ necessary to prevent loss of life, personal injury, or severe property damage;
- (b) There were no feasible alternatives to the bypass, such as the use of auxiliary ~~[pumping, conveyance, or]~~ treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if ~~[the] [permittee could have installed]~~ adequate backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and
- (c) The permittee submitted notices and requests as required under paragraph c of this section.

- (2) The Director may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, when the Director determines that it will meet the three conditions listed above in paragraph b(1) of this section.

c. Notice and request for bypass.

- (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior written notice, if

biological mass out of the aeration basins. If this happens, it may take several days to reproduce the biological mass needed to effectively treat the influent waste. In such cases, short-term bypasses are believed preferable to longer term upset conditions caused by damage to the wastewater treatment processes.

This is the language in 40 CFR, part 122.41 (m)(4)(B).

The additional language requires that alternatives to bypassing be evaluated prior to permission being granted.

This clarifies that a written request is required, to prevent misunderstandings that can occur with verbal communications.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in ~~[brackets]~~ and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in ~~[brackets]~~ and new material underlined. A-7

possible at least ten days before the date of the bypass.

- (2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section D, Paragraph D-5.

~~[d. --Bypass not exceeding limitations:~~

~~The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. -- These bypasses are not subject to the provisions of paragraphs b and c of this section.]~~

This section is moved to 3(a).

4. Upset

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operation error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of

General Condition B.4. is a direct quote from 40 CFR, part 122.41(n). This condition has not been included in permits because of legal actions taken by the State of Oregon in 1979 and 1980 to prevent EPA from requiring that an upset condition be placed in state-issued NPDES permits. The State (and others) argued that states were allowed to have more stringent requirements than those required by the CWA and, if the state omitted the upset condition, such action resulted in a more stringent program.

The Department believes that the upset condition specified in 40 CFR, part 122.41(n) actually reflects the actions normally taken by the Department in cases of upsets. Therefore, as far as it applies to Department action, the inclusion of an upset condition is not significant. It is

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in **[brackets]** and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in **[brackets]** and new material underlined.

Section B.4.c. of these General Conditions are met. No determination made during administrative review of claims that non-compliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

- (1) An upset occurred and that the permittee can identify the causes(s) of the upset;
- (2) The permitted facility was at the time being properly operated; and
- (3) The permittee submitted notice of the upset as required in Section D.5., hereof (*one [24] hour notice*).
- (4) The permittee complied with any remedial measures required under Section A.3 hereof.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

significant, however, relative to potential actions taken by citizens pursuant to Section 505 of the Clean Water Act. Without the upset condition actually specified in the permit, if sued by a citizen for violations caused by an upset, permittees are not allowed to make an affirmative defense that the cause of the upset was beyond their reasonable control. The Department believes that permittees should have this defense available to them, since it is allowed under federal regulations.

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in [brackets] and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in [brackets] and new material underlined.

5. Treatment of Single Operational Event [Upset]

For purposes of this permit, A Single Operational Event [Upset] which leads to simultaneous violations of more than one pollutant parameter shall be treated as a single violation. A single operational event is an exceptional incident which causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one Clean Water Act effluent discharge pollutant parameter. A single operational event does not include Clean Water Act violations involving discharge without an NPDES permit or noncompliance to the extent caused by improperly designed or inadequate treatment facilities. Each day of a single operational event is a violation.

6. Overflows from Wastewater Conveyance Systems and Associated Pump Stations

a. Definitions

(1) "Overflow" means the diversion and discharge of waste streams from any portion of the wastewater conveyance system including pump

The term "event" has been substituted for "upset", to prevent confusion with Condition B.4. The provisions of a single operation event are a result of changes made to the Clean Water Act in 1987 (Sec. 309(c)(5)). Essentially, it requires the Department and citizens to treat simultaneous violations as a single violation in certain enforcement actions.

In order to claim a single operation event, the "event" must be exceptional, i.e., a non-routine, unusual malfunction of a facility's usual proper and adequate operation. The event must not be business as usual. It can be applied to violations of either technology-based limitations or water quality-based limitations. The burden of proof is upon the permittee to make the case for a single operational upset.

As in the case of a regulatory upset, the Department could maintain a more stringent program and not provide for the single operational upset. The Department does not believe, however, that its inclusion in the permits will significantly restrict its enforcement actions.

Oregon has historically defined "bypasses" to include wastewater conveyance or sewer system overflows. Federal law defines bypasses to mean diversions that occur at the treatment plant only. Condition 3 in this section has been modified to exclude wastewater conveyance or sewer system overflows. Condition 6 is added to address wastewater conveyance system overflows specifically.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in [brackets] and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in [brackets] and new material underlined. A-10

EXPLANATION

stations, through a designed overflow device or structure, other than discharges to the wastewater treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the conveyance system or pump station which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of an overflow.

(3) "Uncontrolled overflow" means the diversion of waste streams other than through a designed overflow device or structure, for example to overflowing manholes or overflowing into residences, commercial establishments, or industries that may be connected to a conveyance system.

b. Prohibition of overflows. Overflows are prohibited unless:

(1) Overflows were unavoidable to prevent an uncontrolled overflow, loss of life, personal injury, or severe property damage; and

(2) There were no feasible alternatives to the overflows, such as the use of auxiliary pumping or conveyance systems, or maximization of conveyance system storage; and

The Department recognizes that sewer systems with excessive infiltration and inflow into the systems at times may have flows that exceed the carrying capacity of the sewer lines or exceed the pump station capacity or both. In addition, pump stations may fail due to power outages or mechanical failures. At such times, it is preferable to have a "controlled" overflow to a stream than to have the wastewater back up into the system and overflow a manhole or into someone's basement.

Each river basin includes minimum design criteria for sewage wastes including overflows in OAR 340-41. General condition B.5.(a)(3) is a paraphrase of the minimum design expectations for overflows included in OAR-340-41.

This condition is directed to sewer systems primarily, but also applies to industrial wastewater conveyance systems.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in [brackets] and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in [brackets] and new material underlined. A-11

(3) For overflows caused by flows that exceed the capacity of the conveyance system or pump stations or both, the excessive flows are the result of infiltration and inflow, whose elimination the Department determines is necessary but not presently practicable; and

(4) For overflows caused by mechanical or structural failure of the conveyance system or pump station, the cause of the failure was an exceptional incident beyond the reasonable control of the permittee. Overflows caused by operation error, improperly designed facilities, or lack of preventative maintenance are not beyond the reasonable control of the permittee.

c. Uncontrolled overflows are prohibited where wastewater is likely to escape or be carried into the waters of the State by any means.

d. Reporting required. Unless otherwise specified in this permit, all overflows and uncontrolled overflows must be reported orally to the Department within one hour from the time the permittee becomes aware of the overflow. Reporting procedures are described in more detail in Condition D.5.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in [brackets] and new material under-
lined. Changes proposed May 20, 1991 are indicated in italics wherever possible with deleted material in [brackets] and new material underlined. A-12

EXPLANATION

7. [6]. Public Notification of Effluent Violation or Overflow [By-Pass-or-Upset]

If [~~as a result of a by-pass or an upset, the permittee is caused to exceed~~] effluent limitations specified in this permit are exceeded or an overflow occurs, upon request by the Department, the permittee shall take such steps as are necessary to alert the public about the extent and nature of the discharge [by-pass-or-upset]. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

Condition B7 has been added to provide permittees with the responsibility to notify the public when effluent violations or an overflow occurs.

8. [4.] 7. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in such a manner as to prevent any pollutant from such materials from entering public waters, causing nuisance conditions, or creating a public health hazard.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in [brackets] and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in [brackets] and new material underlined.

SECTION C. MONITORING AND RECORDS

EXPLANATION

1. Representative Sampling

Sampling and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and shall be taken, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ± 10 ~~{%}~~ percent from true discharge rates throughout the range of expected discharge volumes.

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in [brackets] and new material under-
lined !. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in [brackets] and new material underlined.

4. Penalties of Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than ~~{6 months per violation}~~ two years, or by both. If a conviction of a person is for a violation committed after a first conviction of such person, punishment is a fine not more than \$20,000 per day of violation, or by imprisonment of not more than four years or both.

This language comes from 40 CFR, part 122.41(j)(5) and is a direct quote.

5. Reporting of Monitoring Results

Monitoring results shall be summarized each month on a Discharge Monitoring Report form approved by the Department. The reports shall be submitted monthly and are to be ~~{postmarked}~~ mailed, delivered or otherwise transmitted by the ~~{14th}~~ 15th day of the following month unless specifically approved otherwise in Schedule B of this permit.

40 CFR, part 122.41(1)(4)(i) requires that monitoring results shall be reported at the intervals specified elsewhere in this permit. Intervals are at the discretion of the Department. The proposed changes are proposed to provide for other types of transmittal including electronic data transmittal is so provided in the future. Municipal sources have indicated that submittal by the 15th of the month would be preferable. The Department did not believe that one additional day before submittal would impose any hardship on the Department staff.

6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall

The last sentence is added to clarify that only one value per parameter per day is to be included on the monthly monitoring reports submitted to the Department. However, all data is to be retained at

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in ~~{brackets}~~ and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in ~~{brackets}~~ and new material underlined.

EXPLANATION

be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated. For a pollutant parameter that may be sampled more than once per day (e.g., Total Chlorine Residual), only the average daily value shall be recorded unless otherwise specified in this permit.

the wastewater treatment plant for a period of not less than three (3) years, and is available for inspection by the Department.

7. Averaging of Measurements

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean, except for coliform and fecal coliform bacteria which shall be averaged based on a geometric or log mean.

8. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records of all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, ~~[or]~~ report ~~or~~ ~~[of]~~ application. This period may be extended by request of the Director at any time.

9. Records Contents

Records of monitoring information shall include:

- a. The date, exact place, time and methods of sampling or measurements;

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in ~~[brackets]~~ and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in ~~[brackets]~~ and new material underlined.

EXPLANATION

- b. The individual(s) who performed the sampling or measurements;
- c. The date(s) analyses were performed;
- d. The individual(s) who performed the analyses;
- e. The analytical techniques or methods used; and
- f. The results of such analyses.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative upon the presentation of credentials to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, and
- d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

Direct quote from 40 CFR, part 122.41(i), except that the words, "and other documents as may be required by law", have not been included. The Department believes that the Director or an authorized representative should be allowed to enter a permitted facility once Department credentials have been provided to the permittee.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in **[brackets]** and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in **[brackets]** and new material underlined.

SECTION D. REPORTING REQUIREMENTS

EXPLANATION

1. Planned Changes

~~[The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility which will result in a change in the character of pollutants to be discharged or which will result in a new or increased discharge of pollutants.]~~ The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

- a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR, Part 122.29(b); or
- b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR, Part 122.42(a)(1); or
- c. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices; and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application

The language in General Condition D.1. is a direct quote from 40 CFR, part 122.41(1)1). The difference in language is not significant. In such cases, the Department believes it is preferable to use the language directly from the federal rules.

In most cases, the Department has attempted to not include regulatory or statutory citations. This is because regulations and statutes may change during the life of the permit. In the case of this condition, however, regulatory citations are included. This does not impose a potential liability upon the permittee because the permittee is able to refer to the appropriate regulatory requirements before action being considered is taken.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in ~~[brackets]~~ and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in ~~[brackets]~~ and new material underlined.

process or not reported pursuant to an approved
land application plan.

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and the rules of the Commission. No permit shall be transferred to a third party without prior written approval from the Director. The permittee shall notify the Department when a transfer of property interest takes place.

4. Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in **{brackets}** and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in **{brackets}** and new material underlined.

5. One [Twenty-Four] Hour Reporting

The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally (by telephone) within one hour [24-hours] from the time the permittee becomes aware of the circumstances. During normal business hours, the Department's Regional office shall be called. Outside of normal business hours, the Department shall be contacted at 1-800-452-0311 (Oregon Accident Response System). A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain:

- a. A description of the noncompliance and its cause;
- b. The period of noncompliance, including exact dates and times;
- c. The estimated time noncompliance is expected to continue if it has not been corrected; and
- d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
- e. Public notification steps taken, pursuant to General Condition B-6.

Reporting of effluent violations has been changed to 1 hour from 24 hours. The Department must be immediately notified of violations to insure that necessary notification of the public including downstream users occurs, and that other appropriate corrective actions are undertaken immediately.

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in [brackets] and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in [brackets] and new material underlined.

EXPLANATION

The following shall be included as information which must be reported within one hour [~~with-24-hours~~] under this paragraph:

- a. Any unanticipated bypass which exceeds any effluent limitation in this permit.
- b. Any upset which exceeds any effluent limitation in the permit.
- c. Any overflow or uncontrolled overflow, unless otherwise specified in this permit.
- d. Violation of maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within one hour [~~with-24-hours~~].

The Department may waive the written report on a case-by-case basis if the oral report has been received within one hour [~~24-hours~~].

The language in Condition D.5., as changed, is identical to language in 40 CFR, part 122.41(1)(6) except for subparagraph e. Subparagraph e. is believed necessary to assure that the public has been notified when unhealthful conditions may be occurring.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in [brackets] and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in [brackets] and new material underlined.

6. Other Noncompliance

The permittee shall report all instances of non-compliance not reported under Section D4 or D5, at the time monitoring reports are submitted. The reports shall contain:

This conforms to the federal regulation 40 CFR, part 122.41(1)(7).

- a. A description of the noncompliance and its cause;
- b. The period of noncompliance, including exact dates and times;
- c. The estimated time noncompliance is expected to continue if it has not been corrected; and
- d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

7. Duty to Provide Information

The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

Other Information: When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Department, it shall promptly submit such facts or information.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in [brackets] and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in [brackets] and new material underlined.

8. Signatory Requirements

All applications, reports or information submitted to the Department shall be signed and certified in accordance with 40 CFR 122.22.

9. Falsification of Reports

State law provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than \$1,000 per violation, or by imprisonment for not more than six months per violation, or by both.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in **[brackets]** and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in **[brackets]** and new material underlined.

SECTION E. DEFINITIONS

EXPLANATION

- | | |
|--|---|
| <p>1. BOD means five-day biochemical oxygen demand.</p> <p>2. TSS means total suspended solids (non-filterable residue).</p> <p>3. <u>M</u>[m]g/l means milligrams per liter.</p> <p>4. <u>K</u>[k]g means kilograms.</p> <p>5. <u>M</u>[m]³/d means cubic meters per day.</p> <p>[4-] 6. MGD means million gallons per day.</p> <p>[5-] 7. <u>Composite sample means a sample formed by collecting and mixing discrete samples taken periodically and based on time or flow.</u>
<i>[Composite sample means a combination of samples collected, generally at equal intervals over a 24-hour period, and apportioned according to the volume of the flow at the time of the sampling.]</i></p> <p>[6-] 8. FC means fecal coliform bacteria.</p> <p>[9-] <u>Single-Operation-Upset means an exceptional incident which causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one Clean Water Act effluent discharge pollutant parameter. -- Single operational upset does not include Clean Water Act violations involving discharge without an NPDES or WPCF permit or noncompliance to the</u></p> | <p>Several definitions are added.</p> <p>This definition was incorporated in Condition B.5.</p> |
|--|---|

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in [brackets] and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in [brackets] and new material underlined.

extent-caused-by-improperly-designed-or
inadequate-treatment-facilities:]

9. Technology based permit effluent limitations means technology-based treatment requirements as defined in 40 CFR 125.3, and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-41.
10. CBOD means five day carbonaceous biochemical oxygen demand.
11. Grab sample means an individual discreet sample collected over a period of time not to exceed 15 minutes.
12. Quarter means January through March, April through June, July through September, or October through December.
13. Month means calendar month.
14. Week means any period of seven consecutive days within a calendar month.
15. Total residual chlorine means combined chlorine forms plus free residual chlorine.

MW\WH43\WH4325A (June 13, 1991)

NOTE:

Changes proposed January 18, 1991 are indicated as deleted material in [brackets] and new material underlined. Changes proposed May 20, 1991 are indicated in *italics* wherever possible with deleted material in [brackets] and new material underlined.

ATTACHMENT B

Subpart C—Permit Conditions

§ 122.41 Conditions applicable to all permits (applicable to State programs, see § 123.25).

The following conditions apply to all NPDES permits. Additional conditions applicable to NPDES permits are in § 122.42. All conditions applicable to NPDES permits shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to these regulations (or the corresponding approved State regulations) must be given in the permit.

(a) *Duty to comply.* The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

(1) The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

(2) The Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or

limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed \$25,000 per day for each violation. The Clean Water Act provides that any person who *negligently* violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation, or by imprisonment of not more than 2 years, or both. Any person who *knowingly* violates such sections, or such conditions or limitations is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than 6 years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject

to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.

(3) Any person may be assessed an administrative penalty by the Administrator for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.

(b) *Duty to reapply.* If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.

(c) *Need to halt or reduce activity not a defense.* It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(d) *Duty to mitigate.* The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(e) *Proper operation and maintenance.* The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve com-

pliance with the conditions of the permit.

(f) *Permit actions.* This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

(g) *Property rights.* This permit does not convey any property rights of any sort, or any exclusive privilege.

(h) *Duty to provide information.* The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Director upon request, copies of records required to be kept by this permit.

(i) *Inspection and entry.* The permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

(1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(3) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(4) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

(j) *Monitoring and records.* (1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(2) Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

(3) Records of monitoring information shall include:

(i) The date, exact place, and time of sampling or measurements;

(ii) The individual(s) who performed the sampling or measurements;

(iii) The date(s) analyses were performed;

(iv) The individual(s) who performed the analyses;

(v) The analytical techniques or methods used; and

(vi) The results of such analyses.

(4) Monitoring results must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, unless other test procedures have been specified in the permit.

(5) The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

(k) *Signatory requirement.* (1) All applications, reports, or information

submitted to the Director shall be signed and certified. (See § 122.22)

(2) The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(1) *Reporting requirements.* (1) *Planned changes.* The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(i) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in § 122.29(b); or

(ii) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under § 122.42(a)(1).

(iii) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;

(2) *Anticipated noncompliance.* The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(3) *Transfers.* This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Clean Water Act. (See § 122.61; in

some cases, modification or revocation and reissuance is mandatory.)

(4) *Monitoring reports.* Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(i) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices.

(ii) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(iii) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

(5) *Compliance schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

(6) *Twenty-four hour reporting.* (i) The permittee shall report any non-compliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the non-compliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

(ii) The following shall be included as information which must be report-

ed within 24 hours under this paragraph.

(A) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See § 122.41(g).

(B) Any upset which exceeds any effluent limitation in the permit.

(C) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. (See § 122.44(g).)

(iii) The Director may waive the written report on a case-by-case basis for reports under paragraph (1)(6)(ii) of this section if the oral report has been received within 24 hours.

(7) *Other noncompliance.* The permittee shall report all instances of noncompliance not reported under paragraphs (1) (4), (5), and (6) of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (1)(6) of this section.

(8) *Other information.* Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

(m) *Bypass—(1) Definitions.* (i) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

(ii) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

(2) *Bypass not exceeding limitations.* The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (m)(3) and (m)(4) of this section.

(3) *Notice—(i) Anticipated bypass.* If the permittee knows in advance of the need for a bypass, it shall submit prior

notice, if possible at least ten days before the date of the bypass.

(ii) *Unanticipated bypass.* The permittee shall submit notice of an unanticipated bypass as required in paragraph (1)(6) of this section (24-hour notice).

(4) *Prohibition of bypass.* (i) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

(A) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(B) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(C) The permittee submitted notices as required under paragraph (m)(3) of this section.

(ii) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph (m)(4)(i) of this section.

(n) *Upset—(1) Definition.* "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

(2) *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph (n)(3) of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompli-

Environmental Protection Agency

ance, is final administrative action subject to judicial review.

(3) *Conditions necessary for a demonstration of upset.* A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(i) An upset occurred and that the permittee can identify the cause(s) of the upset;

(ii) The permitted facility was at the time being properly operated; and

(iii) The permittee submitted notice of the upset as required in paragraph (1)(6)(ii)(B) of this section (24 hour notice).

(iv) The permittee complied with any remedial measures required under paragraph (d) of this section.

(4) *Burden of proof.* In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

(Information collection requirements in paragraph (e)(i) were approved by the Office of Management and Budget under control number 2040-0047)

(Clean Water Act (33 U.S.C. 1251 *et seq.*), Safe Drinking Water Act (42 U.S.C. 300f *et seq.*), Clean Air Act (42 U.S.C. 7401 *et seq.*), Resource Conservation and Recovery Act (42 U.S.C. 6901 *et seq.*))

[48 FR 14153, Apr. 1, 1983, as amended at 48 FR 39620, Sept. 1, 1983; 49 FR 38049, Sept. 26, 1984; 50 FR 4514, Jan. 31, 1985; 50 FR 6940, Feb. 19, 1985; 54 FR 255, Jan. 4, 1989; 54 FR 18783, May 2, 1989]

EDITORIAL NOTE: Information collection requirements in paragraph (1)(1) have not been approved by the Office of Management and Budget, and are not effective, pending OMB approval.

STATE OF OREGONDEPARTMENT OF ENVIRONMENTAL QUALITYINTEROFFICE MEMORANDUM

DATE: May 20, 1991

TO: Lydia Taylor

FROM: Barbara Burton *Barbara Burton*SUBJECT: Summary of Comments Received, and Department Response -
Proposed Revised General Conditions to National
Pollutant Discharge Elimination System (NPDES) Permits

Proposed revised general conditions to Oregon's NPDES permits were drafted and made available for public comment on January 18, 1991. A public hearing was held to receive verbal testimony on February 21, 1991. No one offered testimony at the public hearing. Ten individuals or organizations provided written comments by the end of the comment period. The following summarizes significant points raised, and the Department's response to those comments.

Upset Provisions (Condition B.4)

1. **Comment:** DEQ's past practice has been to not allow a defense in the case of an upset, and in fact filed suit to prevent EPA from requiring this type of defense in Oregon. By adding this provision, DEQ is relaxing it's standards. This is bad policy.

Response: It is true that the Department previously resisted allowing the "upset" permit condition to be added to Oregon's permits. However, we have always followed the policy of in practice not assessing civil penalties when it appeared that the violation was beyond the reasonable control of the permittee. The cause of a violation is a major factor when the Department is considering appropriate enforcement action. The proposed language, which comes out of federal law, actually reflects the actions taken by the Department.

The proposed condition allows permittees to make an "affirmative defense" if they can demonstrate that the cause of the effluent violations was truly beyond their control. Examples of causes beyond the control of the permittee would include a pump station hit by lightning, or a major region wide power blackout. Examples of causes that would not be considered beyond the reasonable control of the permittee would be violations caused by operator error, improperly

Memo to: Lydia Taylor
May 20, 1991
Page 2

designed treatment facilities, lack of preventative maintenance, or careless operation. The burden of proof that the violation was beyond reasonable control would rest with the permittee, not the Department.

The Department is supporting this permit condition because it is equitable, and because it reflects actual Department practice in investigating and enforcing permit violations. It is clearly not fair to issue a civil penalty to a permittee who had no control over the violation.

This proposed change will have little if any impact on Department enforcement practices. However, it may impact third party lawsuits. Third party litigants will not be able to collect damages for violations that were beyond the control of the permittee. In third party lawsuits as well as proceedings before the Department, it will be up to the permittee to make the case that the violations were beyond their control.

Third party lawsuits are permitted under the federal Clean Water Act, but not under Oregon law. The Clean Water Act provides this very limited defense for permittees, and it is appropriate to allow this defense in Oregon. The affirmative defense is not available to permittees unless specified in the NPDES permit.

2. **Comment:** The condition does not adequately define what is an "exceptional incident" that would qualify as an upset that was beyond the reasonable control of the permittee.

Department response: This condition gives some guidance as to what is not an "exceptional incident", including careless or improper operation, improperly designed treatment facilities, and lack of proper preventative maintenance. There will clearly be some cases where almost all reasonable people would agree that the violation was beyond the control of the permittee, such as the bolt of lightning. There will be cases where almost all reasonable people would agree that the violation should have been prevented, as in an inadequately trained operator accidentally turning off power to a portion of a treatment plant. There will also be some circumstances in between, where reasonable people could disagree about whether a violation was or was not beyond the permittee's control. For example, if a pump control panel shorted out, resulting in a bypass, the Department would

Memo to: Lydia Taylor
May 20, 1991
Page 3

probably find that the upset defense would apply and not take enforcement action. If the same pump control panel shorted out again a month later, then it could be just a wild coincidence, or it could be improper design. The Department would probably take enforcement action, based on an investigation of the two incidents. If it happened a third time, it clearly is the result of improper design or operation or maintenance and the Department would take enforcement action.

There is no way to define what is an exceptional incident that would cover all possibilities. Two malfunctions in two months might not be acceptable; what about two similar malfunctions in twenty years? The Department intends to continue to investigate each violation, and use best professional judgement to determine what is or is not beyond the reasonable control of the permittee.

3. **Comment:** The inclusion of an affirmative defense for an upset that is beyond the reasonable control of the permittee is appropriate and equitable.

Department response: We agree.

4. **Comment:** The upset provision only applies for violations of "technology based limitations". The upset provision does not apply if the effluent standards are "water quality based". "Technology based limitations" should be defined as only federal secondary treatment standards; conversely, this term should be defined as federal secondary treatment standards and minimum design criteria listed in OAR 340-41 basin standards.

Department response: The Department lists minimum design criteria for sewage treatment facilities in each river basin, and these limits are often more stringent than federal secondary treatment standards. The Department considers these limits to be water quality related, since they were adopted to protect water quality. However, these limits are not water quality based, which refers to limits set for "water quality limited" streams where waste loads are allocated to each discharger based on bringing the water body back into compliance with water quality standards.

A definition has been added to the general conditions that defines "technology based limitations" as those referred to 40 CFR 125.3 (secondary treatment standards) and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-41.

Single Operational Upset (Event) (B.5)

1. **Comment:** This condition was objected to as reducing the possible civil penalties that could be assessed for a violation, and thereby reducing the incentive for permittees to comply. It was further objected to as being vague in that some of the terms were not well defined or understood, and the term "upset" appeared to be used differently in this condition than in Condition B.4.

Department response: This condition is nearly verbatim from the federal regulations, and recognizes that in some circumstances permittee liability should be reduced. In order to qualify for this reduction in liability, the permittee must demonstrate that the event was an unusual, non-routine malfunction of a facility's normal adequate treatment. It applies where a single malfunction results in effluent violations of more than one pollutant. Under these circumstances, this condition would require that the single malfunction be counted as one violation, rather than multiple violations for the different pollutants. Each day of violation would count as a separate violation.

This condition is consistent with Department enforcement practice, in that the seriousness of the violation (i.e. how many pollutants/how far over standards/environmental impact/how many days of violation) are all considered, but only one civil penalty is normally assessed for each event or series of events. Each pollutant that exceeds standards may be listed separately in the enforcement action, but separate civil penalties are not normally issued for each pollutant or for each day of violation.

This defense may be available to permittees, without it having to appear in the permit. However, an argument could be made that not having it in Oregon's permits is tacitly a more stringent requirement. States are permitted to have more stringent standards, and Oregon has many permit conditions that are deliberately more stringent and restrictive than those required by EPA.

The Department supports this condition as affording a reasonable limitation on liability as allowed in federal laws. It is also consistent with Department enforcement actions. If in the future Department enforcement policies should change, this permit condition could easily be removed or modified.

Language clarification is proposed, to prevent confusion between an "upset" in Condition B.4 (which is not a violation) and a "single operational event" which is a violation, but has limitations on liability. Language is added to further define what a single operational event is.

Wastewater Conveyance System Overflows (New B.6)

1. **Comment:** The change in definition of "bypass" in the upset provision now excludes overflows from the wastewater conveyance system. These overflows need to be addressed in the general conditions.

Department response: We agree. A condition has been added to prohibit discharges from the wastewater conveyance system, including pump stations, except under certain conditions. The permittee is also required to notify the Department of any overflows, within one hour.

The Department recognizes that some municipalities have sewer system overflows, and requires that these be eliminated when the next major plant upgrade occurs (OAR 340-41-034(f)). Each permittee is also required by permit condition (in the main body of the permit) to aggressively reduce infiltration and inflow, which are the principal causes of system overflows.

Basis for Permit Actions Including Revocation (A.5)

1. **Comment:** Under this condition, permits could be revoked for trivial permit violations such as being one day late with a monitoring report. Only substantial violations should be grounds for permit revocation.

Department response: The Department agrees that permits should not be revoked for trivial violations. We would not revoke a permit because of a minor permit violation.

The permit language is restrictive, however, it mirrors both state and federal law. OAR 340-45-060 allows for suspension or revocation of an NPDES permit for permit violations. 40 CFR 122.64 allows denial of a permit application or revocation of an existing permit for any permit violation. In order to be consistent with both state and federal law, the Department is proposing to keep the language as originally drafted.

Permit References to Federal or State Rules (A.6, New A.8)

1. **Comment:** The reference to state or federal statute in general, and specifically to the federal toxic pollutants limitations, should be clarified to those rules or regulations in effect at the time of permit issuance. It is not fair to expect all permittees, particularly small municipalities, to keep up to date with the latest federal regulations. Rather, the burden should be on the Department to modify each permit when a rule change occurs.

Department response: The Department agrees in part. 40 CFR 122.5 recognizes that compliance with an NPDES permit constitutes compliance with the Clean Water Act, except for toxic pollutants and sludge (Sections 307(a) and 405(d) of the Clean Water Act). This means that new rules would have to be included by permit modification, otherwise the rule referenced in the permit is that which was in effect when the permit was issued (except for sludge and toxic pollutants).

Under federal law, permittees are required to comply with the current version of the toxic pollutants and sludge rules, even if the permit has not been modified to reflect the new rule. Condition A.6 therefore remains unchanged, however a new condition A.8 is added that clarifies rules referenced in the permit (except for toxics and sludge) are those in effect at the time of permit issuance.

Bypassing of Treatment Units (B.3.a(1))

1. **Comment:** Bypassing of treatment units should be allowed, as long as effluent limitations are not exceeded.

Department response: We disagree. If treatment units are available on site and can result in better quality effluent, then they should be in use. OAR 340-41 includes the following language: "Notwithstanding the water quality standards contained below, the highest and best practicable

Memo to: Lydia Taylor
May 20, 1991
Page 7

treatment and/or control of wastes, activities, and flows shall in every case be provided..." Allowing units to stand idle that could reduce effluent discharges is clearly not "highest and best practicable treatment". The language in the condition has been changed to clarify the meaning, but bypassing of treatment units will still only be allowed when the nonuse results in an insignificant impact on the effluent.

Duty to Halt or Reduce Activity (B.2)

1. **Comment:** Most of this language could apply to industries, but doesn't make sense for municipal sewage treatment plants.

Department response: We agree. The language has been clarified to only apply to industrial and commercial permittees.

Reporting Frequencies (C.6)

1. **Comment:** The condition requiring that testing done in excess of that specified in the permit be included, is unreasonable.

Department response: Federal law requires that all test results be included. We have clarified that only one value be included for those tests done many times in one day (such as chlorine residual).

Public Notification (B.6)

1. **Comment:** Past procedure has been for the permittee to notify DEQ, and DEQ would notify appropriate news media. Many permittees do not have media contacts or staff able to handle such notifications. This condition should be dropped.

Department response: The Department will continue to notify state-wide media, as necessary, in the event of a major upset or bypass. What we are referring to in this condition is the posting of warning signs at downstream swimming areas, or other places where the public is likely to come into contact with the discharge. We are also expecting the permittees to notify county health officials, as necessary. The Department will continue to work with permittees on each individual spill or upset, to give advice and direction as needed.

Memo to: Lydia Taylor
May 20, 1991
Page 8

The Department has 24-hour coverage for emergency upsets and spills and is available for consultation (1-800-452-0311). However, the posting of signs and notification of local interested parties is most appropriately done by the permittee.

ATTACHMENT D

To: Enforcement Section, DEQ

From: _____
(Region or Program)

Subject: Enforcement Case Referral

(Case Name)

cc: _____
(Region or Program)

Enforcement Use Only:

Date Received: _____

Reviewed by & date _____

Case Assigned to: _____

Date Assigned: _____

Case No. _____

Regional or Program _____ Date _____
Manager approval (Regional Manager approves if Regional referral;
Program Manager approves if Program referral.)

Supervisor approval _____ Date _____

Prepared by _____ Date _____

ENFORCEMENT ACTION REQUESTED (mark with an X):

Issue a Notice of Violation and Intent to Assess Civil Penalty (NOI).

Issue a Notice of Violation and Civil Penalty Assessment (CPA).

Issue a Notice of Violation and Compliance Order (NOVCO) (used only for HW).

Issue a NOVOCO and CPA (used only for HW).

Issue a Department Order (primarily used in the HW and animal waste programs).

Issue a Stipulation and Final Order (SFO) - (primarily used in HW and WQ programs. The Region or program should draft the SFO and attach it to this referral; check with Enforcement for sample SFO's.).

Amend SFO No. _____
(attach draft amendment).

Comments:

VIOLATOR INFORMATION: (mark with an X)

The violator's name and address is the same as is on a DEQ permit or license (attach copy).

Violator's telephone number, if available:

There have been previous DEQ formal enforcement actions against this party. List case numbers:

CASE DETAILS: [Note: If you have prepared and attached an inspection report or memo that details any of the following questions, you do not have to repeat the information below. However, you do need to specify under each question, by reference, exactly where the information is located in the attachments (eg. See 3rd paragraph of page 4 of the 5/21/89 inspection report.)]

1. What is the problem and how did you find out about it?
2. What did you observe?
3. When did the violation occur?
4. Where did the violation occur? (Street address or tax lot, section, township and range. Please identify property owner if this is an on-site sewage, hazardous waste or solid waste or waste tire disposal, or illegal open burning where the person responsible for the fire is unknown.)
5. Where did the violation occur on the property? (Attach a diagram if it would help in describing this.)
6. Why did the violation occur? (Was it due to accident, equipment breakdown, unusual weather conditions or negligent, intentional or flagrant act or omission of the violator?) Describe.
7. If you believe the cause of the violation was due to negligence, intentional or flagrant conduct of the violator, state why.
8. Describe the evidence/documentation you collected. If appropriate, were samples collected? (Attach a diagram describing sample locations and sample results.) Were photos taken? (Write date and description on the back of each photo, and your initials or do a photo log.)
9. List the statutes, administrative rules (OAR) or 40 CFR's that were violated, the class of each violation, and the evidence supporting each

violation (or state where the evidence can be found in the referral or attachments; be specific.)

10. List witnesses (including DEQ or other agency personnel), addresses and phone numbers. What did each witness observe and how was each affected by the violation(s)? (Try to get a signed statement from each witness.) State whether or not the witness is willing to testify and whether or not the witness appears to be credible.
11. What were the impacts of the violation(s) on people, the environment, property, or wildlife. Describe the amounts of the materials involved, toxicity of the materials, duration of the violation(s), opacity, etc.
12. Did you interview the violator? (You should always try to talk with the violator.) What is the violator's story on what happened? Did the violator admit to the violations?
13. Was the violator cooperative in correcting or trying to correct the violation(s)? Explain.
14. Is the problem on-going or has it been corrected?
15. Did the violator gain an economic benefit as a result of the violation(s)? If yes, state how much and how you determined that amount.
16. Do you have any information concerning the economic condition of the violator?
17. Is there any history of noncompliance that has a bearing on this case?
18. Is there any specific compliance request you want to have stated in the cover letter? If this action is an Order, list what you want ordered and by what date?

19. Is there anything else we should be aware of in preparing this case?

20. Are you sure?

ATTACHMENTS

**Additional pertinent case information -
please mark appropriate items (with an X) and attach to the referral.**

Notice of Noncompliance

Correspondence

Memos regarding the incident

Property ownership information

Permit or licenses

Photographs

Diagrams

Inspection reports

Reports from other agencies such as fire, police, ODA, APD

Sample results

Chain of custody documentation

Self monitoring reports

Location maps

Tax lot maps

Smoke readers certification number and expiration dates for white and black smoke

Complaint forms

Witness statements

REQUEST FOR EQC ACTION

Meeting Date: June 14, 1991
Agenda Item: B
Division: MSD
Section: Administration

SUBJECT:

Approval of tax credit applications; approval of request for extension to file a pollution control tax credit application; and revocation of three tax credit certificates.

ACTION REQUESTED:

- Work Session Discussion
 - General Program Background
 - Potential Strategy, Policy, or Rules
 - Agenda Item for Current Meeting
 - Other: (specify)

- Authorize Rulemaking Hearing
- Adopt Rules
 - Proposed Rules Attachment
 - Rulemaking Statements Attachment
 - Fiscal and Economic Impact Statement Attachment
 - Public Notice Attachment

- Issue a Contested Case Order
- Approve a Stipulated Order
- Enter an Order
 - Proposed Order Attachment

- Approve Department Recommendation
 - Variance Request Attachment
 - Exception to Rule Attachment
 - Informational Report Attachment
 - Other: (specify) Attachment A, B

Tax credit application review report; approve request for extension of time to file a pollution control tax credit application; revoke certificates for facilities no longer in service.

511 SW Sixth Avenue
Portland, OR 97204-1390
(503) 224-5696

Meeting Date: June 14, 1991
Agenda Item: B
Page 2

Tax Credit Application Review Reports:

TC-2398 Teledyne Ind., Inc.	Secondary spill containment system.
TC-2432 Teledyne Ind., Inc.	Secondary spill containment system.
TC-2772 Boise Cascade Corp.	Bin vent filters; vertical eductor system; modify green liquor feed.
TC-2785 Space Age Fuel, Inc.	Installation of three fiberglass tanks and piping, spill containment basins, float vent valves, tank monitor, turbine leak detectors, monitoring wells and Stage I and II vapor recovery equipment and piping.
TC-2866 Marc Nelson Oil Company	Installation of a tank monitor system and overflow alarm.
TC-2918 Kennel Farms	Straw storage shed.
TC-3035 Oak Park Farms, Inc.	Rear's converted Hesston Loafer 60A Grass-Vac.
TC-3083 Willamette Industries, Inc.	Electrified filter bed electrostatic precipitator.
TC-3092 Willamette Industries, Inc.	Metal building enclosing sanderdust drop box.
TC-3186 Stanley Goffena	Rear's 30' tandem axle propane flamer.
TC-3252 Stimson Lumber Co.	Dip tank and lumber storage facility for anti-sapstain chemical treatment.
TC-3339 Truax Corporation	Installation of cathodic protection, spill containment basins and automatic shutoff valves.
TC-3359 Roy's Auto Repair	Auto air conditioner recycling machine.

Meeting Date: June 14, 1991
Agenda Item: B
Page 3

TC-3383
Harold H. Young

Installation of four fiberglass tanks and piping, spill containment basins and a tank monitor.

TC-3388
Pacificorp

Installation of two double wall fiberglass tanks and double wall fiberglass piping, spill containment basins, tank monitor and turbine leak detectors.

TC-3390
Al's Automotive Service Center

Auto air conditioner recycling machine.

TC-3397
Mill Waste Recycling Co.

Mobile log yard debris separation system.

TC-3398
Mt. Hood Refuse Removal, Inc.

Pole building, cement slab and 3-phase wiring for storage and operation of baler; Marathon V-6030 HP baler; and 30 yd. drop box.

TC-3400
Oregon Rootstock Tree Co., Inc.

Rear's propane flamer.

TC-3401
Hazel E. Whaley

Installation of three STI-P3 tanks and fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, overflow alarm, automatic shutoff valves, monitoring wells and Stage II vapor recovery piping.

TC-3402
Tim & Lori VanLeeuwen

Straw storage shed.

TC-3403
Roy A. Bowers & Sons, Inc.

New Holland 858 round baler; New Holland 216 28' rake.

TC-3405
Clyde Montgomery

Rear's Grass-Vac, John Deere conversion.

TC-3406
Clyde Montgomery

Rear's Grass-Vac, John Deere conversion.

TC-3407
Gladys VanLeeuwen Farms

New Holland 858 round baler.

TC-3408
Norm's Auto Repair

Auto air conditioner recycling machine.

Meeting Date: June 14, 1991
Agenda Item: B
Page 4

TC-3409 Flying W Ranch	Deutz-Fahr round baler; Kello built #225 disk; used John Deere 8630 Trailer.
TC-3410 Christiansen Farms	Rear's 12' Grass-Vac.
TC-3411 Christiansen Farms	John Deere 4955 200 HP tractor.
TC-3412 Christiansen Farms	John Deere 2800 6-18 plow.
TC-3414 Oak Park Farms, Inc.	Rear's inverted Hesston Loafer; 60 A Grass-Vac.
TC-3415 H. T. Rea Farming Corp.	Installation of secondary containment for two aboveground storage tanks.
TC-3416 Verger Chrysler-Plymouth-Dodge, Inc.	Auto air conditioner recycling machine.
TC-3421 Laughlin-Hall, Inc.	New installation of three doublewall fiberglass tanks, doublewall fiberglass piping, spill containment basins, tank monitor, line leak detectors, overflow alarm, automatic shutoff valves, monitoring wells and Stage I & II vapor recovery.
TC-3422 Robert W. Byram	Installation of three STI-P3 tanks and fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, overflow alarm, automatic shutoff valves, monitoring wells and Stage II vapor recovery piping.
TC-3423 Daniel & Jo Ann Keeley	Drain tile system; John Deer flail chopper; Howard M1100 rototiller; Massey Ferguson 1150 tractor.
TC-3424 Vanasche Farms	Rear's 30' propane flamer; Case-International tandem disk #596.
TC-3425 Vanasche Farms	John Deere 2955 tractor; John Deere 265 loader.
TC-3426 Clatskanie Mini-mart	Installation of three composite tanks and double wall fiberglass piping,

Meeting Date: June 14, 1991
Agenda Item: B
Page 5

	spill containment basins, tank monitor, automatic shutoff valves and line leak detectors, monitoring wells and sumps.
TC-3427 G & S Chevron	Installation of spill containment basins, tank monitor and line leak detectors.
TC-3428 Scott's, Inc.	Auto air conditioner recycling machine.
TC-3429 Sunset Fuel Company, Inc.	Installation of epoxy lining in four steel tanks, spill containment basins, tank monitor and overflow alarm.
TC-3430 University Service Center	Auto air conditioner recycling machine.
TC-3431 Warden Farms	New Holland 858 round baler.
TC-3432 Neils Jensen	Harrel 3608 8 bottom plow.
TC-3433 John Singer	12' Grass-Vac with side dump attachments; converted used 1971 Ford Tilt Cab C-700 2-ton truck.
TC-3434 Landmark Ford, Inc.	Auto air conditioner recycling machine.
TC-3435 Pacific Petroleum Corp.	Installation of epoxy lining in four steel tanks, spill containment basins and underground preparation for a tank monitor system.
TC-3437 Fred Meyer, Inc.	New installation of one fiberglass tank, double wall fiberglass piping for the new and two existing tanks, epoxy lining in two existing steel tanks, spill containment basins, tank monitor, turbine leak detectors and an oil/water separator.
TC-3438 Western Stations Co.	Installation of four steel/fiberglass composite tanks and fiberglass piping, spill containment basins, sumps, tank monitor, automatic shutoff valves, monitoring wells and Stage I & II vapor recovery equipment and piping.

Meeting Date: June 14, 1991
Agenda Item: B
Page 6

TC-3439 Western Stations Co.	Installation of three steel/fiberglass composite doublewall tanks, fiberglass piping, spill containment basins, tank monitor, automatic shutoff valves, monitoring wells and Stage I & II vapor recovery equipment and piping.
TC-3440 Alberta Body & Paint	Auto air conditioner recycling machine.
TC-3441 Creswell Comm. Srvcs., Inc.	Installation of four STI-P3 tanks and fiberglass piping, spill containment basins, tank monitor, monitoring wells, turbine leak detectors, automatic shutoff valves, sumps and Stage I vapor recovery equipment.
TC-3444 Hawthorne Auto Clinic, Inc.	Auto air conditioner recycling machine.
TC-3446 4 B Farms, Inc.	Rear's 12' Grass-Vac.
TC-3447 Richard L. Allen	Installation of four fiberglass tanks and piping, spill containment basins, tank monitor, turbine leak detectors, automatic shutoff devices, overflow alarm, monitoring wells, sumps and Stage I and II vapor recovery equipment and piping.
TC-3448 Oregon Rootstock & Tree Co.	New Holland 505 baler; New Holland bale wagon; Caterpillar tractor; and hydraulic system/hay squeezer attachments.
TC-3449 Atlantic Richfield Company	Installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.
TC-3450 Atlantic Richfield Company	Installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring

Meeting Date: June 14, 1991
Agenda Item: B
Page 7

- wells and Stage I and II vapor recovery equipment and piping.
- TC-3451
Atlantic Richfield Company
Installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.
- TC-3452
Atlantic Richfield Company
Installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.
- TC-3453
Atlantic Richfield Company
Installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.
- TC-3454
Atlantic Richfield Company
Installation of four double wall fiberglass/steel tanks and fiberglass piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.
- TC-3455
Atlantic Richfield Company
Installation of five double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.
- T-3456
Gresham Chevron
Auto air conditioning recycling machine.
- TC-3457
Stein Oil Co., Inc.
New installation of four STI-P3 tanks and fiberglass piping, spill containment basins, turbine leak detectors, automatic shutoff valves,

Meeting Date: June 14, 1991
Agenda Item: B
Page 8

TC-3458
Stein Oil Co., Inc.

monitoring wells, sumps, oil/water separator and Stage I and II vapor recovery equipment and piping.

Installation of three fiberglass tanks and double wall fiberglass piping, spill containment basins, overfill alarm, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

TC-3459
Stein Oil Co., Inc.

Installation of two fiberglass tanks and double wall fiberglass piping, spill containment basins, turbine leak detectors, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

TC-3460
Merritt #1, Inc.

Installation of three double wall fiberglass/steel composite tanks, double wall fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, automatic shutoff valves, overfill alarm, monitoring wells, sumps and Stage I and II vapor recovery equipment and piping.

TC-3461
Merritt #2, Inc.

Installation of three double wall fiberglass/steel tanks and double wall fiberglass piping, spill containment basins, tank monitor, line leak detectors, automatic shutoff valves, overfill alarm, monitoring wells, sumps, oil/water separator and Stage I and II vapor recovery equipment and piping.

TC-3462
Merritt #2, Inc.

Installation of three double wall composite tanks and double wall fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, automatic shutoff valves, overfill alarm, monitoring wells, sumps and Stage I and II vapor recovery equipment and piping.

TC-3463
Merritt Truax, Inc.

Installation of three double wall composite tanks and fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, automatic shutoff valves, overfill alarm,

Meeting Date: June 14, 1991
Agenda Item: B
Page 9

TC-3464
Merritt Truax, Inc.

monitoring wells, sumps and Stage I and II vapor recovery equipment and piping.

Installation of four double wall composite tanks and fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, automatic shutoff valves, overflow alarm, monitoring wells, sumps, oil/water separator and Stage I and II vapor recovery equipment and piping.

TC-3465
Merritt Truax, Inc.

Installation of four double wall composite tanks and fiberglass piping, spill containment basins, interstitial monitor, turbine leak detectors, automatic shutoff valves, overflow alarm, monitoring wells, sumps, oil/water separator and Stage I and II vapor recovery equipment and piping.

TC-3466
Truax Oil

Installation of a tank monitor and an overflow alarm.

TC-3467
Pacific Petroleum Corp.

Installation of four STI-P3 tanks with anodes, fiberglass piping, spill containment basins, tank monitor, line leak detectors, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

TC-3468
Pacific Petroleum Corp.

Installation of four STI-P3 tanks with anodes, fiberglass piping, spill containment basins, tank monitor, line leak detectors, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

TC-3469
Pacific Petroleum Corp.

Installation of fiberglass piping, spill containment basins, turbine leak detectors and automatic shutoff valves.

TC-3476
Metro Metric Automotive Service

Auto air conditioning recycling machine.

TC-3477
Atlantic Richfield Company

Installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak

Meeting Date: June 14, 1991
Agenda Item: B
Page 10

detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

TC-3478
Atlantic Richfield Company

Installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

TC-3479
Atlantic Richfield Company

Installation of five double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

TC-3480
Atlantic Richfield Company

Installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

TC-3481
Heller & Sons Dist., Inc.

Installation of one STI-P3 tank and cathodic protection on three steel tanks and steel piping for four tanks, spill containment basins, tank monitor system, turbine leak detectors, automatic shutoff valves and monitoring wells.

TC-3482
Stein Oil Co., Inc.

Installation of four STI-P3 tanks and double wall fiberglass piping, spill containment basins, turbine leak detectors, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

TC-3483
Old Town Chevron

Auto air conditioning recycling machine.

TC-3484
McMullin Chevrolet,
Pontiac, Oldsmobile, Inc.

Auto air conditioning recycling machine

Meeting Date: June 14, 1991
Agenda Item: B
Page 11

TC-3486
Merritt #1, Inc.

Installation of three double wall composite tanks and fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, automatic shutoff valves, overflow alarm, monitoring wells, sumps, oil/water separator and Stage I and II vapor recovery equipment and piping.

TC-3487
Apple City Auto Body Shop

Auto air conditioning recycling machine.

TC-3489
Roselawn Seed, Inc.

Straw storage shed; mobile field sanitizer; and Freeman baler.

TC-3490
Dean & Kathleen Schrock

Straw storage shed.

TC-3491
Sherrill Funrue

Side-delivery wheel rake; 16 x 8 buckrake; Hesston 30 stakhand.

TC-3492
Roger Eder

Straw storage shed.

TC-3493
Guthmiller's Exxon

Installation of three fiberglass tanks and piping, spill containment basins, line leak detectors, tank monitor, automatic shutoff valves, monitoring wells, overflow alarm and Stage I and II vapor recovery equipment and piping.

TC-3494
Sheldon Oil Company

Installation of three fiberglass tanks and piping, spill containment basins, tank monitor with overflow alarm, monitoring wells and automatic shutoff valves.

TC-3495
Sheldon Oil Company

Installation of one three compartment STI-P3 tank, fiberglass piping, spill containment basins, tank monitor with overflow alarm, automatic shutoff valves and monitoring wells.

TC-3496
Alan Bowdish, Inc.

Auto air conditioning recycling machine.

TC-3498
Kirsch Family Farms, Inc.

Allen 851 hay rake; Allen 852 hay rake; New Holland 505 baler, 1984; New Holland 505 baler, 1985; Freeman balewagon; V-180 forklift with bale squeeze; straw

Meeting Date: June 14, 1991
Agenda Item: B
Page 13

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends the Environmental Quality Commission approve certification for tax credit applications identified above; approve a one-year filing extension to Willamette Industries, Inc. (See Attachment A); and approve revocation of Certificates No. 2148, 2151 and 2152.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

Yes.

Note - Pollution Tax Credit Totals:

Proposed June 14, 1991 Totals

	<u>Certified Costs*</u>	<u># of Certificates</u>
Air Quality	\$ 2,230,196	31
CFC - AQ	39,762	15
Solid Waste	111,582	2
Noise	0	0
Underground Storage Tanks	4,173,927	48
Water Quality	380,737	3
Hazardous Waste	0	0
TOTAL	\$ 6,936,204	99

1991 Calendar Year Totals through April 26, 1991

	<u>Certified Costs*</u>	<u># of Certificates</u>
Air Quality	\$11,884,903	49
CFC - AQ	0	0
Solid Waste	36,617	1
Noise	0	0
Underground Storage Tanks	3,351,550	90
Water Quality	2,087,426	4
Hazardous Waste	0	0
TOTAL	\$17,360,496	144

*These amounts represent the total facility costs. To calculate the actual dollars that can be applied as credit, the total facility cost is multiplied by the determined percent allocable of which the net credit is 50 percent of that amount.

Meeting Date: June 14, 1991
Agenda Item: B
Page 14

INTENDED FOLLOWUP ACTIONS:

Notify applicants of Environmental Quality Commission

Approved:

Section:

Robert L. [Signature]

Division:

[Signature]

Director:

Jul [Signature]

Report Prepared By: Roberta Young

Phone: 229-6408

Date Prepared: May 28, 1991

RY:y
MY101514
May 28, 1991

State of Oregon
Department of Environmental Quality

Request For Extension To File A Final Application

1. Applicant

Willamette Industries, Inc.
2730 Pacific Boulevard SE
PO Box 907
Albany, OR 97321

2. Request

The applicant requests a 120-day extension to file pollution control tax credit certificate applications for air pollution control facilities. The company has experienced difficulties in documenting the eligible components of the project. (See attached letter.)

3. Authority

OR 340-16-020 (e) provides the Commission with authority to grant a one-year extension of time to file an application if circumstances beyond the control of the applicant would make a timely filing unreasonable.

4. Director's Recommendation

The Director recommends the Commission grant Willamette Industries, Inc. a one-year filing extension which would terminate on June 14, 1992, to allow the company additional time to submit application TC-2794.

Roberta Young
MY101515
(503) 229-6408

Willamette Industries, Inc.

Building Materials Group
Sales and Operations Office



2730 Pacific Blvd S.E.
P.O. Box 907
Albany, Oregon 97321
503/926-7771

April 25, 1991

Department of Environmental Quality
811 SW Sixth Avenue
Portland, Oregon 97204
Attn: Roberta Young

Re: Willamette Industries, Inc.
Extension Request for Filing Application for Final
Certification
AQ-WI, Duraflake NC-2407, TC-2791

Willamette Industries, Inc. hereby requests an extension of 120 days until August 25, 1991, pursuant to OAR 340-16-020(2)(e), to complete and receive approval for the above-reference Application for Final Certification of Pollution Control Facility for Tax Relief Purposes.

Per our books and records, Willamette's Duraflake Project #1792 - Line 3 Face and Core Revision - was completed and placed in service on May 1, 1989. Since the completion of this project, Willamette has been trying to gather and document data which breaks down the project between components eligible for the pollution control credit and those not eligible. Of the approximately \$970,000 project, roughly 11% is eligible for the credit.

We have experienced difficulty in documenting the eligible portion of this project in a manner which will satisfy the Certified Public Accountants who certify to the eligible costs of the project. Because of this difficulty, we are unable to meet the two year deadline for filing the DEQ's Application for Final Certification pursuant to OAR 340-16-020(2)(b) as amended in 1989. We therefore request an extension of 120 days until August 25, 1991, pursuant to OAR 340-16-020(2)(c), to complete and receive approval for the above-referenced Application for Final

Department of Environmental Quality
811 SW Sixth Avenue
Portland, Oregon 97204
April 25, 1991
Page Two

Certification of Pollution Control Facility for Tax Relief Purposes. Please note that we intend to file the application within 30 days of today's date, but we are requesting a 120 day extension in case the DEQ requests additional information.

Cordially,

WILLAMETTE INDUSTRIES, INC.



Jon E. Lund
Engineering Services

mjb

STATE OF OREGON
DEPARTMENT OF ENVIRONMENTAL QUALITY
REVOCATION OF POLLUTION CONTROL TAX CREDIT CERTIFICATES

1. Applicant:

Merritt Truax, Inc.
P.O. Box 2099
Salem, OR 97300

2. Certificates to be Revoked:

Certificate No. 2148: EBW 705-5 Spill containment manholes with
overflow recovery vessels.

Certificate No. 2151: EBW 705-5 Spill containment manholes with
overflow recovery vessels.

Certificate No. 2152: EBW 705-5 Spill containment manholes with
overflow recovery vessels.

3. Reason for Revocation: ORS 468.185 authorizes the Environmental
Quality Commission to revoke tax credit certification if the facility
ceases to operate for the purpose of preventing, controlling or
reducing the type of pollution indicated on the permit. In this case,
the applicant has removed the facilities from service in April, May and
September of 1990. No credit has been applied for through the three
certificates. Under ORS 468.155(2)(e)(B) the applicant has applied for
certification for replacement facilities through TC-3460, TC-3462 and
TC-3465.

4. Department Recommendation:

The Department recommends that the Commission revoke Certificates 2148,
2157 and 2152 in accordance with authority under ORS 468.185 in that
the facilities have been removed and are no longer in operation.

Certificate No. 2148
Date of Issue 5/25/90
Application No. T-2542

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
POLLUTION CONTROL FACILITY CERTIFICATE

Issued to: Merritt Truax, Inc. P.O. Box 2099 Salem, OR 97308	Location of Pollution Control Facility: 35310 Hwy. 58 Pleasant Hill, OR 97455
As: () Lessee (x) Owner	
Description of Pollution Control Facility: EBW 705-5 spill containment manholes with overflow recovery vessels.	
Type of Pollution Control Facility: () Air () Noise (x) Water () Solid Waste () Hazardous Waste () Used Oil	
Date Facility was completed: 4/12/89	Placed into Operation: 4/12/89
Actual Cost of Pollution Control Facility: \$1852.00	
Percent of actual cost properly allocable to pollution control: 100 Percent	

Based upon the information contained in the application referenced above, the Environmental Quality Commission certifies that the facility described herein was erected, constructed or installed in accordance with the requirements of subsection (1) of ORS 468.165, and is designed for, and is being operated or will operate to a substantial extent for the purpose of preventing, controlling or reducing air, water or noise pollution or solid waste, hazardous wastes or used oil, and that it is necessary to satisfy the intents and purposes of ORS Chapters 454, 459, 467 and 468 and rules adopted thereunder.

Therefore, this Pollution Control Facility Certificate is issued this date subject to compliance with the statutes of the State of Oregon, the regulations of the Department of Environmental Quality and the following special conditions:

1. The facility shall be continuously operated at maximum efficiency for the designed purpose of preventing, controlling, and reducing the type of pollution as indicated above.
2. The Department of Environmental Quality shall be immediately notified of any proposed change in use or method of operation of the facility and if, for any reason, the facility ceases to operate for its intended pollution control purpose.
3. Any reports or monitoring data requested by the Department of Environmental Quality shall be promptly provided.

NOTE: The facility described herein is not eligible to receive tax credit certification as an Energy Conservation Facility under the provisions of Chapter 512, Oregon Law 1979, if the person issued the Certificate elects to take the tax credit relief under ORS 316.097 or 317.072.

Signed



Title William P. Hutchison, Jr., Chairman

Approved by the Environmental Quality Commission
on the 25th day of May, 1990.

Certificate No. 2151
Date of Issue 5/25/90
Application No. T-2546

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
POLLUTION CONTROL FACILITY CERTIFICATE

Issued to: Merritt Truax, Inc. P.O. Box 2099 Salem, OR 97308	Location of Pollution Control Facility: 3510 River Rd., N Salem, OR 97303
As: () Lessee (x) Owner	
Description of Pollution Control Facility: EFW 705-5 spill containment manholes with overflow recovery vessels.	
Type of Pollution Control Facility: () Air () Noise (x) Water () Solid Waste () Hazardous Waste () Used Oil	
Date Facility was completed: 2/1/89 Placed into Operation: 2/1/89	
Actual Cost of Pollution Control Facility: \$1,389.00	
Percent of actual cost properly allocable to pollution control: 100 Percent	

Based upon the information contained in the application referenced above, the Environmental Quality Commission certifies that the facility described herein was erected, constructed or installed in accordance with the requirements of subsection (1) of ORS 468.165, and is designed for, and is being operated or will operate to a substantial extent for the purpose of preventing, controlling or reducing air, water or noise pollution or solid waste, hazardous wastes or used oil, and that it is necessary to satisfy the intents and purposes of ORS Chapters 454, 459, 467 and 468 and rules adopted thereunder.

Therefore, this Pollution Control Facility Certificate is issued this date subject to compliance with the statutes of the State of Oregon, the regulations of the Department of Environmental Quality and the following special conditions:

1. The facility shall be continuously operated at maximum efficiency for the designed purpose of preventing, controlling, and reducing the type of pollution as indicated above.
2. The Department of Environmental Quality shall be immediately notified of any proposed change in use or method of operation of the facility and if, for any reason, the facility ceases to operate for its intended pollution control purpose.
3. Any reports or monitoring data requested by the Department of Environmental Quality shall be promptly provided.

NOTE: The facility described herein is not eligible to receive tax credit certification as an Energy Conservation Facility under the provisions of Chapter 512, Oregon Law 1979, if the person issued the Certificate elects to take the tax credit relief under ORS 316.097 or 317.072.

Signed William P. Hutchison, Jr.

Title William P. Hutchison, Jr., Chairman

Approved by the Environmental Quality Commission
on the 25th day of May, 1990.

Certificate No. 2152
Date of Issue 5/25/90
Application No. T-2547

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
POLLUTION CONTROL FACILITY CERTIFICATE

Issued to: Merritt Truax, Inc. P.O. Box 2099 Salem, OR 97308	Location of Pollution Control Facility: 1395 Highway 99 Eugene, OR 97402
As: <input type="checkbox"/> Lessee <input checked="" type="checkbox"/> Owner	
Description of Pollution Control Facility: EBW 705-5 spill containment manholes with overflow recovery vessels.	
Type of Pollution Control Facility: <input type="checkbox"/> Air <input type="checkbox"/> Noise <input checked="" type="checkbox"/> Water <input type="checkbox"/> Solid Waste <input type="checkbox"/> Hazardous Waste <input type="checkbox"/> Used Oil	
Date Facility was completed: 4/30/89 Placed into Operation: 4/30/89	
Actual Cost of Pollution Control Facility: \$1,389.00	
Percent of actual cost properly allocable to pollution control: 100 Percent	

Based upon the information contained in the application referenced above, the Environmental Quality Commission certifies that the facility described herein was erected, constructed or installed in accordance with the requirements of subsection (1) of ORS 468.165, and is designed for, and is being operated or will operate to a substantial extent for the purpose of preventing, controlling or reducing air, water or noise pollution or solid waste, hazardous wastes or used oil, and that it is necessary to satisfy the intents and purposes of ORS Chapters 454, 459, 467 and 468 and rules adopted thereunder.

Therefore, this Pollution Control Facility Certificate is issued this date subject to compliance with the statutes of the State of Oregon, the regulations of the Department of Environmental Quality and the following special conditions:

1. The facility shall be continuously operated at maximum efficiency for the designed purpose of preventing, controlling, and reducing the type of pollution as indicated above.
2. The Department of Environmental Quality shall be immediately notified of any proposed change in use or method of operation of the facility and if, for any reason, the facility ceases to operate for its intended pollution control purpose.
3. Any reports or monitoring data requested by the Department of Environmental Quality shall be promptly provided.

NOTE: The facility described herein is not eligible to receive tax credit certification as an Energy Conservation Facility under the provisions of Chapter 512, Oregon Law 1979, if the person issued the Certificate elects to take the tax credit relief under ORS 316.097 or 317.072.

Signed



Title William P. Hutchison, Jr., Chairman

Approved by the Environmental Quality Commission
on the 25th day of May, 1990.

Meeting Date: June 14, 1991
Agenda Item: B
Division: Air Quality
Section: Vehicle Inspection Program

TO: Environmental Quality Commission
FROM: Fred Hansen, Director
SUBJECT: Background on Automobile Air Conditioner Coolant
Recycling Equipment Tax Credits

In 1989, the Oregon legislature passed SB 1100 which limits the release of ozone-depleting chemicals into the environment. Among other requirements, it mandates the use of automobile air conditioner coolant recycling equipment when work is done on automobile air conditioners. On August 10, 1990 the Commission approved the requirement that large automotive shops (defined as having three or more covered bays and four or more employees) be required to use recycling machines beginning August 10, 1991 while small shops have an additional year to comply.

The tax credit law authorizes the Commission to provide tax credit certification for facilities which have a principal or sole purpose of preventing, controlling or reducing air pollution and which comply with Oregon air quality regulations. Air conditioner coolant recycling machines prevent the release of chloroflourocarbon-12 (CFC-12) into the environment by providing for the removal and cleaning of spent CFC-12 from vehicle air conditioners during servicing and disposal. The cleaned CFC-12 can then be reused as an air conditioner coolant. State law ORS 468.616 and regulation OAR 340-22-415 mandate the use of recycling equipment to reduce CFC-12 emissions. It is the Department's position that the coolant recycling machine meets the tax credit program's principle purpose test.

As with other facilities which control pollution by recycling, the Oregon Department of Energy (DOE) offers a tax credit of 35%. So the owner of a CFC-12 recycling machine has the option of applying for either the DEQ or DOE tax credit but not both. To date, the DOE has received approximately 35 applications and the first 15 DEQ applications are submitted for the Commission's consideration today.

SIMPLIFIED DEQ TAX CREDIT APPLICATION FORMS

At the request of Joe Bernard, President of the Oregon Automotive Service Association, the Department reviewed the possibility of revising the standard tax credit application form so that it is more applicable to the coolant recycling machine.

Memo to: Environmental Quality Commission
May 1, 1991
Page 2

There are an estimated 4000-5000 Oregon businesses which will be affected. The Department found the unit cost of recycling equipment is relatively inexpensive, ranging from \$2000 to \$7000 per machine. (The more expensive equipment is generally more automated.) Since the CFC-12 recycling equipment costs are small relative to other facilities, and since it would be difficult to apply the current ROI calculation to the equipment, the Department redesigned the form to orient it specifically for CFC-12 recycling equipment and to substitute the return on investment calculations with standardized operational costs. The following operational costs were included:

- 1) Additional labor to operate the equipment
- 2) Electricity to operate the equipment
- 3) Equipment maintenance costs

The simplified form was then reviewed by a temporary five member advisory committee consisting of two members of the Automotive Service Association, a vendor of recycling equipment and two accountants with automotive shop clientele. The advisory committee was generally in agreement with the simplified form and offered specific suggestions for improvements. Where feasible, their suggestions were incorporated. A copy of the revised form is attached.

The simplified form uses tables to establish percent of capital allocable for tax credit by incorporating standard operating costs, return on investment calculations and percent allocable calculations. An applicant needs only three critical pieces of information to use the table:

- 1) Capital cost of equipment
- 2) Cost of virgin CFC-12 (\$/pound)
- 3) Estimate of CFC-12 that will be recovered per year

One disadvantage of the use of the tables is that the ease of calculation offers the applicant the opportunity to easily manipulate the input data to calculate a palatable "percent allocable". The estimated amount of CFC-12 is especially susceptible to manipulation. As a precaution, the simplified form requires an explanation of how this figure was derived. However, as a practical matter this is not expected to be a significant problem; a Department survey of shops dated April 6, 1990 indicates that less than 4% of the shops are expected to get pay-back on the machine over its useful life.

One unusual aspect of the tables is that the applicant will either get 100% or 0% allocable, with no graduation of allocability. The Department's original calculations did show a narrow range in the

Memo to: Environmental Quality Commission
May 1, 1991
Page 3

table with percentages other than 0 or 100. This variable range covered a difference in estimated recovery of about 50 pounds/year. Because the Department believes that it is difficult to estimate recovery much closer than 50 pounds/year for shops doing a large business, data that fell in this narrow range were converted to 100%.

The model is sensitive to the CFC-12 price and recycling volume because marginal costs of operating and equipment are low compared to its capital costs. So once the capital costs are covered, small increases in either price or volume will exceed the marginal costs and yield a profit.

CURRENT TAX CREDIT APPLICANTS

Today, the Department has submitted for Commission review and approval the first 15 tax credit applications for CFC-12 recycling machines.

The facility costs for the 15 CFC-12 recycling machine applications ranged from \$1980.00 to \$3395.00. For each application, the percent of the capital investment allocable for tax credit was 100%, meaning that in each case the Commission would grant the maximum allowable tax credit. The equipment has a principle purpose of pollution control in that it is required by the Department. This equipment offers no other benefit to the shop operation and would not otherwise be profitable to the business. In addition, although some equipment vendors claim significant profits from the machines, the small amount of CFC-12 recovered by an individual shop and the current low cost of CFC-12 do not offer a break even return on investment for most shops.

The applicants assigned useful life of the equipment ranges from three to 15 years. The Department has assessed a minimum allowable useful life of three years based on estimates from the Mobile Air Conditioners Society (MACS) of three to five years. MACS believes this short useful life will occur because of obsolescence, not because of equipment wear-out. MACS assumes that coming advanced equipment models will be easier to use, making the purchase of a new model a viable economic decision. Also, new equipment that can process the future non-ozone depleting coolant (HFC-134a) will have to be purchased.

To be eligible for tax credit a machine must be certified by Underwriters Laboratory as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers standards, J1990 and J1991, or other equivalent requirements as determined by the Department. For all 15 applications the claimed equipment meets these standards as verified by the model numbers listed on sales receipts and manufacturer's literature.

Memo to: Environmental Quality Commission
May 1, 1991
Page 4

All model numbers were on the list of approved models received by the Department from Underwriters Laboratory.

JC:jc
May 1, 1991

Attachment: Application for Certification of a Pollution Control Facility for Tax Relief - Automobile Air Conditioner Coolant Recycling Equipment - April 1991.

Automobile Air Conditioner Coolant Recycling Equipment Tax Credits, Simplified Application Form Assumptions - May 1, 1991

DEPARTMENT OF ENVIRONMENTAL QUALITY
MANAGEMENT SERVICES DIVISION
811 SW Sixth Avenue
Portland, Oregon 97204

For DEQ Use Only	
Appl. No.	_____
Date Rec'd	_____
Fee Paid	_____
Date Determined Complete	_____

APPLICATION FOR CERTIFICATION OF A POLLUTION CONTROL FACILITY
FOR TAX RELIEF PURSUANT TO ORS 468.155 ET. SEQ.

AUTOMOBILE AIR CONDITIONER COOLANT RECYCLING EQUIPMENT

=====

SECTION I. - IDENTIFICATION OF APPLICANT

(1) Name of Applicant:

(If corporation, exact name as specified in charter; if partnership or joint venture the names of all partners or principals):

Name: _____ Names of officers general partners or principals: _____
Address: _____
City, State, Zip Code: _____

(2) Status of Applicant:

Lessee Owner Individual Partnership Corporation Non-profit Co-op

(3) Person Authorized to Receive Certification:

Name: _____ Title: _____
Address: _____ Phone: _____
City, State, Zip Code: _____

(4) Person to Contact for Additional Details If Different From (3):

Name: _____ Title: _____
Address: _____ Phone: _____
City, State, Zip Code: _____

(5) Location of Claimed Equipment:

Address: _____ City: _____
_____ County: _____

(6) Applicant's IRS Employer Identification Number: _____

(7) Applicant's Tax Year: Beginning Date: _____ Ending Date: _____

(8) Provide the Standard Industrial Classification (SIC) for your business: _____

=====

SECTION II - DESCRIPTION OF OPERATION

Briefly describe the nature of your business: _____

=====

SECTION III - DESCRIPTION OF CFC RECYCLING EQUIPMENT

(1) Only recovery and recycling equipment that is certified by UL as meeting the purity standards in Society of Automotive Engineering Specification J1991 or other standards determined by the Department as being equivalent is eligible for tax credit.

Does your recycling equipment meet these requirements? Yes ___ No ___

Please submit manufacturer's documentation that such requirements are met. Literature should state that equipment has been tested by UL to meet SAE J1991 specifications. Contact the DEQ if this literature is not available from the manufacturer.

(2) Briefly explain the type and function of the equipment purchased.

(3) Is the sole function of the recycling equipment to reclaim, and recycle CFC (or does it have other functions not related to CFC recycling)? Yes ___ No ___

If NO, list the other functions and estimate the percentage of the equipment cost attributable these other functions:

(4) Was the recycling equipment purchased to meet a DEQ requirement? Yes ___ No ___

If NO, explain why equipment doesn't fall under DEQ mandate for recycling of automobile A/C coolant.

(5) How was CFC disposed of prior to purchase of equipment and how has this practice changed with the purchase of the equipment?

(6) Identify alternate methods or equipment for achieving the same pollution control objective.

=====

SECTION IV - SIGNIFICANT DATES AND INFORMATION

(1) Does the claimed recycling equipment replace an existing machine for which either DEQ or the Department of Energy tax credit has been given? Yes ___ No ___

(2) Identify the date claimed equipment was purchased. _____

(3) Identify the date claimed equipment was placed into operation.

(4) Has the claimed equipment previously been certified by DEQ or the Department of Energy for tax credit? Yes ___ No ___

(5) Estimated useful life of claimed equipment. _____
(Useful life means the number of years the claimed equipment is capable of operation before displacement or disposal.)

SECTION V - ALLOCATION OF COSTS

The Department has prepared Table 1 for ease of calculating the percent of the capital cost for the recycling equipment which is allocable for tax credit. The use of Table 1 is outlined below:

- a. Actual cost of the claimed recycling equipment \$ _____
- b. Salvage value of any recycling equipment removed from service \$ _____
- c. Net capital expenditure (a - b) \$ _____
- d. Percentage of equipment's cost attributable to recycling functions _____
- e. Effective capital expenditure (c x d) \$ _____
- f. Estimated amount of freon which will be removed from autos and recycled per year _____ lbs.
Explain how you arrived at this figure. (Attach additional worksheets if necessary.)

- g. Your cost for virgin freon \$ _____ per pound.
- h. Using the information in e, f and g, go to Tables 1-7. Select the correct table based on your effective capital expenditure (e), and locate the percentage of the capital cost for which tax credit will be allowed _____%
- i. Tax credit allowed (e x h x .5) \$ _____

CFC related tax credits can improve the economic feasibility of purchasing and operating CFC recycling equipment. As the price of freon rises and the economics of recovering freon improve, there will be less need to provide incentives like this tax credit. That is why higher volumes and higher freon prices will eventually result in applicants receiving no tax credit.

=====

SECTION VI - REQUIRED EXHIBITS

Attach the following exhibits to the application:

- (1) Manufacturer's literature stating that the recycling machine meets SAE J1991.
- (2) Proof of purchase (receipt or CPA cost certification if over \$20,000).

SECTION VII SUBMITTAL INSTRUCTIONS

- (1) Each item on the application must be completed. Failure to complete all sections will delay processing.
- (2) Include required fees with submittal. Fee is \$50 (application filing fee) plus 1/2 of 1% of actual equipment cost if over \$10,000 (application processing fee). The application filing fee is not refundable, however the application processing fee is refundable.
- (3) Submit two copies of application and exhibits to:

Management Services Division
Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204

=====

SECTION VIII - SIGNATURE

I hereby certify that I have completed this application to the best of my ability, and that the information provided herein and in the attached exhibits is true and correct to the best of my knowledge, and that the facility described in this application was installed and will be operated to a substantial extent for the purpose of recycling freon from automobile air conditioners.

Signature: _____

Title: _____

Date: _____

Version dated 4/91, replaces version dated 2/91.

TABLE 7 (CAPITAL \$6501 +)
 PERCENTAGE OF CAPITAL COST ALLOCABLE TO POLLUTION CONTROL

	PRICE OF VIRGIN FREON (DOLLARS PER POUND)															
	\$2.00	\$2.50	\$3.00	\$3.50	\$4.00	\$4.50	\$5.00	\$5.50	\$6.00	\$6.50	\$7.00	\$7.50	\$8.00	\$8.50	\$9.00	\$9.50
10	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
20	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
40	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
60	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
120	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
140	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
160	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
180	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
200	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
220	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
240	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
260	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
280	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
300	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
320	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
340	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
360	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
380	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0
400	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0
420	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	0
440	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	0
460	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	0
480	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	0
500	100	100	100	100	100	100	100	100	100	100	100	100	100	0	0	0
520	100	100	100	100	100	100	100	100	100	100	100	100	100	0	0	0
540	100	100	100	100	100	100	100	100	100	100	100	100	100	0	0	0
560	100	100	100	100	100	100	100	100	100	100	100	100	100	0	0	0
580	100	100	100	100	100	100	100	100	100	100	100	100	0	0	0	0
600	100	100	100	100	100	100	100	100	100	100	100	0	0	0	0	0

AUTOMOBILE AIR CONDITIONER COOLANT RECYCLING EQUIPMENT TAX CREDITS

SIMPLIFIED APPLICATION FORM ASSUMPTIONS

May 1, 1991
By: Jerry Coffey

- 1) Gross Annual Income from Recycling
= (estimated annual freon recovered-lbs/year) (price of virgin freon)

- 2) Operating Costs:
 - a) Annual Cost for Electricity
= (\$0.045/KWH) (110volts) (2.5amps) (estimated annual freon recovered-lbs)

 - b) Annual Cost for Addition Labor
= (estimated annual freon recovered-lbs/year) (10min/job) (\$20/hr)/(60min/hr) (1.5lb/job)
= (\$2.22/lb) (estimated annual freon recovered-lbs/year)

 - c) Annual Cost for Machine Maintenance
= (0.1) (capital expenditure) (estimated annual freon recovered-lbs/year)/(550)
+ (0.1) (0.1) (capital expenditure) (500)/(550)

The general assumption is that total maintenance cost includes a fixed maintenance cost which is 10% of the maintenance cost caused by use. It also assumes that the total annual maintenance cost is 10% of the capital expenditure cost of the equipment if the equipment is operated at full capacity of 500 lb/year. If a machine retrieves and processes more than 500 lb/year, the formula above would calculate an annual maintenance cost greater than 10% of the capital cost, indicating that more maintenance would be required to keep the equipment running for the full 4 year assumed useful life of equipment.

- 3) Other Assumptions
 - a) Useful life of equipment assumed for return on investment calculation - 4 years.

- b) Interest assumed for return on investment calculation - 10 percent.
- c) Assumed average industrial return on investment for percentage allocable calculations - 17.4 percent.

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Teledyne Industries, Inc.
Teledyne Wah Chang Albany
1600 Old Salem Road/P.O. Box 460
Albany, OR 97321

The applicant owns and operates a zirconium, hafnium, tantalum and niobium metals manufacturing and forming plant located on Old Salem Road in Albany, Oregon.

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

2. Description of Facility

The claimed facility is a secondary spill-containment system for a vehicle refueling station. The spill-containment system consists of a berm and protective barricades.

Claimed facility cost eligible for tax credit: \$9,306.32.
(Accountant's Certification was provided).

This tax-credit application originally included the cost of a used-oil collection system and other items not related to water-pollution prevention. I requested that TWC separate the cost of the water-pollution prevention portions of the project from the previously-submitted total claimed cost of \$97,915. TWC subsequently submitted the revised claimed cost of \$9,306.32.

The portion of the project included in the revised total cost of \$9,306.32 is the materials and labor for construction of the berm.

3. Procedural Requirements

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

The facility met all statutory deadlines in that:

- a. Plans were reviewed and approved under the previous preliminary certification process January 22, 1988.
- b. Construction of the facility was substantially completed on May 25, 1988, and the application for final certification was filed October 26, 1989, within two years of substantial completion of the facility.

The delay in processing this application was due to heavy workload and low priority within the Department and to the delay on the part of the applicant in correcting data initially submitted and providing additional data that was requested.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement (leak prevention of underground storage tanks) imposed by the Department to reduce water pollution.

The facility was inspected after construction completion by the Willamette Valley Regional Office and found to be installed as required by the approved plans and specifications. The Regional Office also reports that the applicant is in substantial compliance with their NPDES discharge permit and this facility has operated satisfactorily since installation.

- 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 saleable or usable commodity.

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

The claimed facility does not generate income or savings, so the ROI is zero.

- 3) The alternative methods, equipment and costs for achieving the same pollution control objective. The applicant investigated alternatives to construction of the secondary containment system. They reported that the existing underground storage tanks could have been replaced with double-walled underground tanks and leak-detection system. The cost would have been similar to the cost of the selected design. The above-ground tank design was selected as there was insufficient space to install an underground tank. The applicant also reasoned that corrective action to repair a leak in an underground tank would be more difficult than for the above-ground tank. The site setting and fire codes allowed installation of an above-ground system.
- 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 and the applicant did not estimate the annual operating expenses.

- 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 percent.

5. Summation

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

- b. The facility is eligible for final tax credit certification in that the principal purpose of the facility is to comply with a requirement imposed by the Department to reduce water pollution and accomplishes this purpose by the elimination of industrial waste as defined in ORS 468.700.
- c. The facility complies with DEQ statutes and rules.
- d. The portion of the facility cost that is properly allocable to pollution control is 100 percent.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$9,306.32 with 100 percent allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-2398.

Jerry E. Turnbaugh
(503) 229-5374
IW\WC8\WC8197
April 17, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Teledyne Industries, Inc.
Teledyne Wah Chang Albany
1600 Old Salem Road/P.O. Box 460
Albany, OR 97321

The applicant owns and operates a zirconium, hafnium, tantalum and niobium metals manufacturing and forming plant located on Old Salem Road in Albany, Oregon.

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

2. Description of Facility

The claimed facility is a secondary containment system for a new, 10,000 gallon above-ground MIBK (methyl isobutyl ketone) storage tank. The secondary containment for the storage tank consists of a sealed pad, a four-foot high enclosing berm and associated equipment.

Claimed facility cost eligible for tax credit: \$28,051.11
(Accountant's Certification was provided).

The applicant originally submitted a claimed cost of \$60,215 which included costs that appeared to be unrelated to the secondary containment. At my request, the applicant reviewed the costs and re-submitted a revised total for the secondary containment system of \$28,051.11.

The portions of the project included in the revised total cost of \$28,051.11 are:

- a. materials and labor for construction of the berm
- b. primer and seal coating for the berm
- c. high-liquid-level alarm for the storage tank
- d. stair system for access to the containment

3. Procedural Requirements

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

The facility met all statutory deadlines in that construction of the facility was substantially completed on October 14, 1988, and the application for final certification was filed August 18, 1989, within two years of substantial completion of the facility.

The delay in processing this application was due to workload and low priority within the Department and to the delay on the part of the applicant in correcting data initially submitted and in providing additional data that was requested.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement (leak prevention of underground storage tanks) imposed by the Department to reduce water pollution.

The facility was inspected after construction completion by the Willamette Valley Regional Office and found to be installed as required by the approved plans and specifications. The Regional Office also reports that the applicant is in substantial compliance with their NPDES discharge permit and this facility has operated satisfactorily since installation.

- 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 saleable or usable commodity.

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

The claimed facility does not generate income or savings, so the ROI is zero.

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

The applicant investigated alternatives to construction of the secondary containment system. They reported that the existing underground storage tank could have been replaced with another, double-walled underground tank and leak-detection system. The above-ground tank design was selected as there was insufficient space to install an underground tank. They also reasoned that corrective action to repair a leak in an underground tank would be more difficult than for the above-ground tank.

- 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 and the applicant did not estimate the annual operating expenses.

- 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 percent.

5. Summation

- a. The facility was constructed in accordance with all regulatory deadlines.
- b. The facility is eligible for final tax credit certification in that the principal purpose of the facility is to comply with a requirement imposed by the Department to reduce water pollution and accomplishes this purpose by the elimination of industrial waste as defined in ORS 468.700.

- c. The facility complies with DEQ statutes and rules.
- d. The portion of the facility cost that is properly allocable to pollution control is 100 percent.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$28,051.11 with 100 percent allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-2432.

Jerry E. Turnbaugh
(503) 229-5374
IW\WC8\WC8226
April 22, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Boise Cascade Corp.
White Paper Division
1300 Kaster Road
St. Helens, OR 97501

The applicant owns and operates a bleached Kraft pulp and paper mill in St. Helens, Oregon.

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

2. Description of Facility

Claimed facility covers several additions to the lime handling system to reduce lime dust emissions.

- (a) Bin Vent filters installed on fresh and reburned lime silos.
- (b) Vertical eductor system within No. 4 slaker to collect dust.
- (c) Modify green liquor feed to slaker to reduce dust.

Claimed Facility Cost: \$370,259.00
(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 all statutory deadlines in that:

- a. The request for preliminary certification was filed April 17, 1989 more than 30 days before construction commenced on June 1, 1989.
- b. The request for preliminary certification was approved before application for final certification was made.

- c. Construction, of the facility was substantially completed on November 30, 1989 and the application for final certification was found to be complete on March 18, 1991 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 imposed by the Department to control air pollution in accordance with OAR 340-21-060.

This control is accomplished by redesign to eliminate air contaminants as defined in ORS 468.275.

Discussion

A Department inspection on July 20, 1988 found non-compliance with lime dust fugitive emissions. The company initiated a program to address areas where lime dust was uncontrolled and to implement process changes and installation of air pollution control equipment.

Bin vent filters were installed on two fresh lime silos and on the reburn lime silo. A vertical eductor system was installed within the No. 4 slaker to remove lime dust and maintain a negative pressure.

To eliminate emissions from the feed end of the slaker, green liquor now enters tangentially within the vertical lime feed pipe. This redesign reduces lime dust by improving the mixing of lime and green liquor.

The completion of these installations have resulted in compliance with lime dust fugitive emissions.

- 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 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 from the installation of these facilities.

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

The applicant has not identified any known alternatives.

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

There is no savings or increase in costs as a result of the facility modification.

- 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 final tax credit certification in that the principal purpose of the facility is to comply with a requirement imposed by the Department, to control air pollution.
- c. The facility complies with DEQ statutes, rules and permit conditions.
- 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 \$370,259.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-2772.

RCH:a
PO\AH12\AH12541

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Space Age Fuel, Inc.
PO Box 607
Gresham, OR 97030

The applicant owns and operates a gas station/grocery store at 2815 E. Powell Valley Rd., Gresham OR, facility no. 1428.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three fiberglass tanks and piping, spill containment basins, float vent valves, tank monitor, turbine leak detectors, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost	\$ 59,733
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on December 31, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in November, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 three steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Fiberglass tanks & piping.
- 2) For spill and overflow prevention - Spill containment basins & float vent valves.
- 3) For leak detection - Tank monitor, turbine leak detectors & monitoring wells.

The applicant also installed Stage I & II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found. Cleanup has been completed.

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.

The Department concludes that all of the costs claimed by the applicant (\$59,733) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the most cost effective. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Fiberglass tanks & piping	\$20,866	33%(1)	\$ 6,886
Spill & Overfill Prevention:			
Spill containment basins	518	100	518
Float vent valves	95	100	95
Leak Detection:			
Tank monitor	5,250	90 (2)	4,725
Turbine leak detectors	504	100	504
Monitoring wells	261	100	261
Stage I & II vapor recovery	2,511	100	2,511
Labor & materials	<u>29,728</u>	<u>100</u>	<u>29,728</u>
Total	\$59,733	76%	\$45,228

- (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 \$20,866 and the bare steel system is \$14,000, the resulting portion of the eligible tank and piping cost allocable to pollution control is 33%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 76%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$59,733 with 76% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-2785.

Barbara J. Anderson:ew
(503) 229-5870
March 4, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Marc Nelson Oil Company
1555 Silverton Rd., NE
Salem, OR 97303

The applicant owns and operates a cardlock station at 244 East Ellendale, Dallas OR, facility no. 9592.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of a tank monitor system and overflow alarm.

Claimed facility cost	\$ 5,883
(Documentation of cost was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed in July, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in July, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 three epoxy lined tanks, spill and overfill prevention, but no leak detection or corrosion protected piping.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For spill and overfill prevention - An overfill alarm.
- 2) For leak detection - Tank monitor system.

The applicant reported that the soil was inspected during construction of the project and no evidence of contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$5,883) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Spill & Overfill Prevention:			
Overfill alarm	\$ 177	100%	\$ 177
Leak Detection:			
Tank monitor	4,275	90 (1)	3,848
Labor & materials	<u>1,431</u>	<u>100</u>	<u>1,431</u>
Total	\$ 5,883	93%	\$ 5,456

- (1) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 93%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$5,883 with 93% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-2866.

Barbara J. Anderson:ew
(503) 229-5870
April 5, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Robert Kennel, Partner
Kennel Farms
10705 Airlie Road
Monmouth, Oregon 97361

The applicant owns and operates a grass seed farm operation in Monmouth, 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 180' x 124' x 22' pole construction, grass seed straw storage shed located at 10705 Airlie Road, Monmouth, Oregon. The land and buildings are owned by the applicant.

Claimed facility cost: \$82,410.77
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicants have 1,913 perennial acres and 583 annual acres under grass seed cultivation. During the 1988 and 1989 open field burning season, the applicants registered to open field burn an approximate average of 1,400 acres and open field burned an averaged of 874 acres. The applicants reduced acres registered to 1114 and acres burned to 454 during the 1990 open field burning season.

With construction of the straw storage facility, the applicants state that 600 acres (1,800 tons) of grass seed straw is baled off, stored, compressed and shipped to end-users to be used as livestock feed. The applicants exchange the straw with a straw broker for the cost of baling and stacking.

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 July 1, 1989, and the application for final certification was found to be

complete on March 25, 1991. The application was submitted within two years of substantial completion of the facility. The request for preliminary certification was approved on May 19, 1989

5. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 the weather for approximately 1,800 tons.

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 \$3,320 to annually maintain and operate the facility. These costs were considered in the return on investment calculation.

The building site had been productive farm ground. Construction resulted in a loss of production difficult for the applicant to estimate.

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 for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- 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. Reviewer's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$82,410.77, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-2918.

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

JB:bmtc2918
March 26, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Oak Park Farms, Inc
Norman Coon, Vernon Coon
31310 Peoria Rd
Shedd, Oregon 97377

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Rear's Manufacturing Company converted Hesston Loafer 60A Grass-Vac, located at 31310 Peoria Rd., Shedd, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: \$29,105.00
(Accountant's Certification was provided.)

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

The applicants have 3,000 perennial and 300 annual acres under grass seed cultivation. Previous to purchase and modification of the straw handling and removal equipment, the applicants primarily relied on open field burning to sanitize their fields.

With this Grass-vac the applicants have reduced open burning by 1,500 perennial acres and expect to only open burn that acreage in cases of disease outbreak. After the straw is raked and custom baled, the Grass-Vac clips the stubble and vacuums the remaining residue removing approximately 99% of all debris. Resulting loafs are usually stack burned although the applicant is experimenting with composting.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on September 1, 1990, and the application for final certification was found to be complete on April 5, 1991. The application was submitted within two years of substantial purchase of the equipment. The request for preliminary certification was approved on June 21, 1989.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment 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. Currently, the applicant is burning the resulting straw loafs but is also experimenting with composting techniques.

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

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 purchase of the equipment.

There is an increase in operating costs of \$16,500 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$29,105.00, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3035.

Dick Abernathy, Operations Coordinator
Smoke Management Program
Natural Resources Division
Oregon Department of Agriculture
(503) 378-6792

State of Oregon
Department of Environmental Quality
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Willamette Industries, Inc.
Korpine Division
1300 S.W. Fifth Avenue
3800 First Interstate Tower
Portland, OR 97201

The applicant owns and operates a particleboard manufacturing facility located at 55 S.W. Division Street in Bend, Oregon.

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

2. Description of Facility

The claimed facility is an Electrified Filter Bed (EFB) electrostatic precipitator to control particulate and hydrocarbon emissions from a particle dryer and a bagfilter to control the particulate and hydrocarbons which come off during EFB gravel recycling.

Claimed Facility Cost: \$405,351.00
(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 all statutory deadlines in that:

- a. The request for preliminary certification was filed June 15, 1989, more than 30 days before installation commenced on September 1, 1989.
- b. The request for preliminary certification was approved before application for final certification was made.
- c. Installation of the facility was substantially completed on March 1, 1990 and the application for final certification was found to be complete on March 8, 1991 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 imposed by the Department to control air pollution. The requirement is to comply with permit conditions limiting emissions from the green dryer.

Willamette Industries has been striving to meet the mass emission and opacity limits on the green dryer ever since its original installation in 1985. Post-installation source testing of the green dryer with the EFB unit has shown compliance with the permit conditions.

This control is accomplished by elimination of air contaminants as defined in ORS 468.275.

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 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 percent return on investment from this facility because there is no gross annual income from the facility.

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

Alternative controls considered were the Geo-energy wet electrostatic precipitator (ESP) and the Rader Pneumatics bag filter. The Geo-Energy wet ESP was rejected due to the wet disposal byproduct and the bagfilter was rejected due to temperature restrictions and possible plugging problems. Both alternatives would have incurred costs that would be 100% allocable to pollution control.

- 4) Any related savings or increase in costs which

occur or may occur as a result of the installation of the facility.

There is no savings from the facility. There is no gross annual income and the cost of maintaining and operating the facility is estimated to be \$24,538.00 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 final tax credit certification in that the principal purpose of the facility is to comply with a requirement imposed by the Department to control air pollution.
- c. The facility complies with DEQ statutes, rules, and permit conditions.
- 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 \$405,351 with 100 % allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3083.

John J. Ruscigno:a
PO\AH123\AH12511
(503) 229-6480
April 8, 1991

State of Oregon
Department of Environmental Quality
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Willamette Industries, Inc.
Korpine Division
1300 S.W. Fifth Avenue
3800 First Interstate Tower
Portland, OR 97201

The applicant owns and operates a particleboard manufacturing facility located at 55 S.W. Division Street in Bend, Oregon.

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

2. Description of Facility

The claimed facility is a metal building housing a sanderdust drop box. The metal building reduces fugitive emissions from loading and unloading the sanderdust drop box.

Claimed Facility Cost: \$30,249
(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 all statutory deadlines in that:

- a. The request for preliminary certification was filed on August 9, 1989, more than 30 days before erection commenced on September 15, 1989.
- b. The request for preliminary certification was approved before application for final certification was made.
- c. Erection of the facility was substantially completed on July 23, 1990 and the application for final certification was found to be complete on April 8, 1991 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 reduce a substantial quantity of air pollution.

This reduction is accomplished by elimination of air pollution as defined in ORS 468.275.

Prior to construction of this building, the sander dust was dropped into the drop box via a high pressure line and target box and the sander dust was often blown into the air causing fugitive emissions. Enclosure of the drop box and the use of mechanical conveyors and screws has greatly reduced the fugitive emissions from this source and the site is presently in compliance with all permit conditions.

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 does not recover or convert waste products into a salable or usable commodity. The material collected by the facility is disposed of in a landfill.

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

There is no percent return on investment from this facility because there is 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 present any alternatives. The Department considers the chosen method of pollution control appropriate for the problem.

- 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 cost of maintaining and operating the facility is \$2,734.00 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 final tax credit certification in that the sole purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the elimination of air contaminants as defined in ORS 468.275.
- c. The facility complies with DEQ statutes, rules, and permit conditions.
- 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 \$30,249.00 with 100 % allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3092.

John J. Ruscigno:a
PO\AH123\AH12514
(503) 229-6480
April 8, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Stanley Goffena
22775 SW Broadmead Road
Amity, Oregon 97101

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Rear's 30', tandem, axle propane flamer, located at 22775 SW Broadmead Road, Amity, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: \$6,565
(The applicant provided copies of proof of purchase.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 1,200 acres of perennial grasses under cultivation. He states that before purchasing the propane flamer he would open field burn as many of his acres as the weather and smoke management program permitted.

With purchase of the propane flamer the applicant can sanitize approximately 530 acres annually without open field burning. The straw is removed by custom balers, compressed, and processed for shipment to Japan.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on August 22, 1988, and the application for final certification was found to be complete on April 26, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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)(B): "Propane flammers or mobile field sanitizers which are alternatives to open field burning and reduce air quality impacts."

- b. Eligible Cost Findings

In determining the percent of the pollution control equipment 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 equipment 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. The propane flamer provides an alternate method to sanitize grass seed fields after harvest.

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

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 purchase of the equipment.

There is an increase in operating costs of \$6,808 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$6,565, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3186.

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

JB:bmTC3186
May 1, 1991

Application No. T-3252

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Stimson Lumber Company
Forest Grove Division
P.O. Box 68
Forest Grove, Oregon 97116

The applicant (Stimson) owns and operates a sawmill on Scoggins Valley Road, near Forest Grove, Oregon.

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

2. Description of Facility

The facility is a dip-tank, containment sump and drip-floor for applying anti-sapstain chemical to lumber. A steel dip-tank is mounted in a concrete containment sump that collects drain-back of chemical that drips from freshly treated lumber. An electric sump pump returns all excess treatment chemical to the dip-tank.

The facility and freshly-treated lumber are protected from rain by being contained within a building. The anti-sapstain chemicals are thus confined to the building rather than being carried out into the storage yard on the freshly-treated lumber.

Facility cost eligible for tax credit: \$343,380
(Accountant's certification was provided.)

The portions of the facility which are considered eligible for tax-credit are:

- (a) The containment building
- (b) The concrete floor (drip-pad)
- (c) The concrete sump for collection of anti-sapstain chemical
- (d) The sump pump, piping and flow-control system to return collected anti-sapstain chemical to the dip tank.

The portion considered to be non-eligible (\$88,978) is the steel dip-tank and lumber hoist (these items are considered production equipment rather than water-pollution control equipment).

The eligible cost is less than the total claimed amount of \$432,358 because of the ineligible costs listed above.

3. Procedural Requirements

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

The facility met all statutory deadlines in that;

- a. Stimson filed a request for preliminary certification for the dip tank with the Department August 5, 1986 and the preliminary certification (WQ-796) was issued August 11, 1986. The preliminary certification did not include the building, which was constructed later to house the dip tank facility and provide covered storage for treated lumber.

However, the fact that the building did not receive preliminary certification is not relevant, since preliminary certification is no longer required.

- b. Construction of the facility was substantially completed on October 10, 1988, and the application for final certification was filed on October 8, 1988, within two years of substantial completion of the facility.

4. Evaluation of Application

The sole purpose of the facility is to prevent a substantial quantity of water pollution.

This prevention is accomplished by elimination of industrial waste as defined in ORS 468.700.

Prior to installation of this facility, a spray booth was used to treat lumber with anti-sapstain chemicals. Overspray from the booth went into the air and to a storm drain which connected to surface water. Freshly-treated lumber was also exposed to rain which can wash off some of the anti-sapstain chemicals and introduce them into the storm water runoff.

The installed closed dipping system eliminates overspray and loss of chemical to the air and the storm drain.

Stimson is in compliance with Department requirements for this facility. The Department has, however, issued a Notice of Noncompliance to Stimson (WQ-NWR-91-23) for release of approximately 20 gallons of white latex paint to Scoggins Creek and has required Stimson to respond with a plan and implementation schedule designed to prevent future such releases.

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 does not recover or convert waste products into a saleable or usable commodity.

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

Stimson estimates that the facility has a negative annual cash flow because the operating costs of the dip tank are expected to be approximately \$30,000 more per year than the operating costs of the replaced spray booth. The ROI calculated by the method of OAR 340-16-030, Table I, from the estimated net savings is zero because of the high capital cost and the long life (30-years) of the facility. The zero ROI makes all of the cost eligible for tax-credit.

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

The spray-booth system previously used was not effective in controlling pollution from loss of spray water to the storm drain. The dip-tank system is an acceptable, effective way to control water pollution.

An alternative method of control that might have been used would have been to improve the existing spray booth and its containment system. Without any cost information on this alternative, it is unknown whether the same degree of protection could have been achieved at a lower cost.

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

See ROI discussion 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.

5. Summation

- a. The facility was constructed in accordance with all regulatory deadlines.
- b. The facility is eligible for final 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 industrial waste as defined in ORS 468.700.
- c. The facility complies with DEQ statutes and rules.
- d. The portion of the eligible claimed cost that is properly allocable to pollution control is 100-percent.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$343,380 with 100 percent allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3252.

Jerry E. Turnbaugh
(503) 229-5374
IW\WC8060
3/25/91

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Truax Corporation
PO Box 3002
Corvallis, OR 97339

The applicant owns and operates a retail gas station at 1115 Pacific Hwy., Cottage Grove OR, facility no. 6979.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of cathodic protection, spill containment basins and automatic shutoff valves.

Claimed facility cost (Documentation of cost was provided)	\$ 9,409
---	----------

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed in July, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in July, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 non-corrosion protected tanks, fiberglass piping and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Cathodic protection.
- 2) For spill and overflow prevention - Spill containment basins & automatic shutoff valves.

The applicant reported that the soil was inspected during construction of the project and no evidence of contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$9,409) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Corrosion Protection:			
Cathodic Protection	\$ 6,400	100%	\$ 6,400
Spill & Overfill Prevention:			
Spill containment basins	660	100	660
Automatic shutoff valve	1,040	100	1,040
Labor & materials	<u>1,309</u>	<u>100</u>	<u>1,309</u>
Total	\$ 9,409	100%	\$ 9,409

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 and water. This is accomplished by preventing releases in soil or water. 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 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$9,409 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3339.

Barbara J. Anderson:ew
(503) 229-5870
March 1, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Ray's Auto Repair
47991 Highway 58
Oakridge, Oregon 97463

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Oakridge, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 10 years.

Claimed Facility Cost: \$2500.00
(Costs have been documented)

3. 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 the facility was determined substantially completed on October 15, 1990, and the application for certification was filed on February 11, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$6.07/pound. The applicant estimated an annual coolant recovery rate of 60 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$2500.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3359.

Jerry Coffey:JC
(503) 239-8644
May 15, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Harold H. Young
1668 Whistlers Lane
Roseburg, OR 97470

The applicant owns and operates a service station/minimart at 20244 N. Umpqua Hwy., Glide OR, facility no. 661.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four fiberglass tanks and piping, spill containment basins and a tank monitor.

Claimed facility cost (Accountant's certification was provided)	\$ 54,918
--	-----------

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on November 8, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on October 8, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 five steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Fiberglass tanks & piping.
- 2) For spill and overflow prevention - Spill containment basins.
- 2) For leak detection - Tank monitor.

The applicant reported that soil testing was performed at the time of tank removal and no contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$54,918) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Fiberglass tanks & piping	\$17,901	58%(1)	\$10,383
Spill & Overfill Prevention:			
Spill containment basins	1,276	100%	1,276
Leak Detection:			
Tank monitor	6,900	90 (2)	6,210
Labor & materials	<u>28,841</u>	<u>100</u>	<u>28,841</u>
Total	\$54,918	85%	\$46,710

- (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 \$17,901 and the bare steel system is \$7,502, the resulting portion of the eligible tank and piping cost allocable to pollution control is 58%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 85%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$54,918 with 85% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3383.

Barbara J. Anderson:ew
(503) 229-5870
March 12, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Pacificorp
700 NE Multnomah
Portland, OR 97232-4116

The applicant owns and operates a hydro-electric generating station at HC Box 76 Toketee Rt., Idleyld Park OR, facility no. 471.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of two double wall fiberglass tanks and double wall fiberglass piping, spill containment basins, tank monitor and turbine leak detectors.

Claimed facility cost	\$ 108,145
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on November 21, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on November 21, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 three steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins.
- 3) For leak detection - Tank monitor and turbine leak detectors.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found and removed.

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.

The Department concludes that the eligible facility cost for the project is \$99,850. This represents a difference of \$8,295 from the applicant's claimed cost of \$108,145 due to a determination by the Department that the cost of soil remediation (\$8,295) is not eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the least costly, state of the art concept. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Double wall fiberglass tanks & piping	\$16,658	53%(1)	\$ 8,829
Spill & Overflow Prevention:			
Spill containment basins	391	100	391
Leak Detection:			
Tank monitor	6,152	90 (2)	5,537
Turbine leak detectors	340	100	340
Labor & materials	<u>76,309</u>	<u>100</u>	<u>76,309</u>
Total	\$99,850	92%	\$91,406

- (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 \$16,658 and the bare steel system is \$7,792, the resulting portion of the eligible tank and piping cost allocable to pollution control is 53%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 92%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$99,850 with 92% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3388.

Barbara J. Anderson:ew
(503) 229-5870
March 18, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Al's Automotive Service Center
3445 NE 82nd Avenue
Portland, Oregon 97220

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Portland, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 10 years.

Claimed Facility Cost: \$2804.15
(Costs have been documented)

3. 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 the facility was determined substantially completed on March 12 1991, and the application for certification was filed on March 14, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$4.50/pound. The applicant estimated an annual coolant recovery rate of 150 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$2804.15 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3390.

Jerry Coffey:JC
(503) 239-8644
May 15, 1991

State of Oregon
Department of Environmental Quality
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Paul D. Parker
Mill Waste Recycling Company
4993 Osage
Sweet Home, OR 97386

The applicant owns and operates a mobile log yard debris separation system.

Application was made for tax credit for a solid waste recycling facility.

2. Description of Facility

The equipment described in the application is a woodwaste mobile log yard debris separation system. The equipment can be moved to various mill sites allowing the applicant to process material from more than just one mill site.

Claimed Facility Cost: \$85,000
(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 all statutory deadlines in that:

Installation of the facility was substantially completed on July 21, 1989 and the application for final certification was found to be complete on April 15, 1991, 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 reduce a substantial quantity of solid waste through recycling.

This reduction is accomplished by the use of a material recovery process.

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.

This factor is applicable because the entire purpose is to separate wood waste and rock (20%), soil amendments and decorative landscape products (65%), and hog fuel (15%). Prior to utilizing this equipment, the dirt, rock and bark accumulated on the log yard and was periodically pushed into piles or landfilled.

The percent allocable determined by using this factor would be 100%.

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

Average annual cash flow is \$5,052.37. This results from the value of the recycled material less operating costs. Dividing the annual average cash flow into the cost of the facility gives a return on investment factor of 16.82. Using Table 1 of OAR 340-60-030, for a life of 10 years, the percent return on investment is zero. As a result, the percent allocable would be 100%.

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

An air classifier was also considered by the applicant, but was not chosen because it cost \$230,000 and did not remove all the rock from the bark, leaving a lower quality end product.

- 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 operating the facility. The cost of maintaining and operating the facility is \$107,751 annually. The income from this facility is approximately \$112,803 annually and has been included in the ROI 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, 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 final tax credit certification in that the sole purpose of the facility is to reduce a substantial quantity of solid waste through recycling.

This reduction is accomplished by the use of a material recovery process.

- c. The facility complies with DEQ statutes and rules.
- 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 \$85,000 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3397.

JM:b
G:\RECY\YB10469
(503) 229-5479
April 19, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Mt. Hood Refuse Removal Inc.
Sandy Transfer Station
P.O. Box 747
Sandy, OR 97055-0747

The applicant owns and operates a public recycling/refuse center at Sandy, Oregon.

Application was made for tax credit for a solid waste recycling facility.

2. Description of Facility

The claimed facility is a pole building, cement slab, and 3-phase wiring for storage and operation of a baler; a "Marathon" V-6030 HP baler for baling post-consumer plastic milk jugs and cardboard; portable fencing to keep material "corralled" during baling; and a 30-yard drop box for containment of the material prior to baling.

Claimed Facility Cost: \$26,581.85
(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 all statutory deadlines in that:

Construction and installation of the facility was substantially completed on August 28, 1990 and the application for final certification was found to be complete on April 8, 1991, 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 reduce a substantial quantity of solid waste through recycling. This reduction is accomplished by the use of a material recovery process.

Prior to constructing the building and installing the baler, the applicant transported the material loose to market in drop boxes. The baler has allowed applicant to haul compacted plastic milk jugs to market every 3-6 months instead of every 2-3 weeks, and cardboard 1 time a month instead of 1-2 times a week.

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:

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

- 1) This factor is applicable because the entire purpose of the pole building, cement slab, 3-phase wiring, portable fencing, baler, and drop box is to store and bale source separated plastic milk jugs and cardboard. The materials are then transported to markets where they are sold for processing.

The percent allocable determined by using this factor would be 100%.

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

The applicant states that for the first 5 years of operation, there will be a negative cash flow. This results because the facility's operating and maintenance expenses exceed estimated annual income. The applicant is able to absorb the cost because his franchise garbage route in Sandy currently subsidizes the recycling operation.

Using Table 1 of OAR 340-60-030, for a life of 10 years, the percent return on investment is zero. As a result, the percent allocable would be 100%.

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

The applicant considered buying a shredder for shredding the plastic milk jugs, but rejected this as cardboard would have to be hauled loose to market. The "Marathon" V-6030 HP baler was chosen because it was the best price, and the company it was purchased from was one of the few to have experimented with baling milk jugs. The baler came with "milk jug doors" which allowed it to bale plastic milk jugs as well as cardboard.

- 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 costs of maintaining and operating the facility is \$32,893 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 final tax credit certification in that the sole purpose of the facility is to reduce a substantial quantity of solid waste through recycling.

This reduction is accomplished by the use of a material recovery process.

- c. The facility complies with DEQ statutes and rules.
- 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 \$26,581.85 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3398.

JM:b
G:\RECY\YB10452
(503) 229-5479
4/15/91

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

David B. Smith, President
Oregon Rootstock and Tree Co., Inc.
10906 Monitor-McKee Road NE
Woodburn, Oregon 97071

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Rear's propane field-flamer, located at 10906 Monitor-McKee Road NE, Woodburn, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: \$7,620
(The applicant provided proof of purchase.)

3. Description of farm operation plan to reduce open field burning.

The applicant has approximately 320 acres of perennial ryegrass under cultivation. In recent years the applicant registered all perennial acres for open field burning and open field burned as many acres as the weather and smoke management program permitted.

The applicant now has approximately 260 acres annually custom baled and sanitized with the propane field-flamer.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on July 2, 1990, and the application for final certification was found to be complete on April 4, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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)(B): "Propane flammers or mobile field sanitizers which are alternatives to open field burning and reduce air quality impacts."

- b. Eligible Cost Findings

In determining the percent of the pollution control equipment 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 equipment 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. The field-flamer is used to sanitize the fields after the grass seed straw is baled off.

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

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 purchase of the equipment.

There is an increase in operating costs of \$352 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$7,620, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3400.

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

JB:bmTC3400
March 4, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Hazel E. Whaley
PO Box 395
Glendale, OR 97442

The applicant owns and operates a service station/grocery store at I-5 Exit 86, Glendale OR, facility no. 570.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three STI-P3 tanks and fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, overflow alarm, automatic shutoff valves, monitoring wells and Stage II vapor recovery piping.

Claimed facility cost \$ 73,289
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed in October, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was operated continuously throughout 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 and water. This is accomplished by preventing releases into soil or water. 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 three steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - STI-P3 tanks and fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, overflow alarm & automatic shutoff valves.
- 3) For leak detection - Tank monitor, turbine leak detectors & monitoring wells.

The applicant also installed piping for Stage II vapor recovery.

The applicant reported that tank tightness testing was performed prior to tank removal and some soil was removed even though it tested below cleanup level.

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.

The Department concludes that all of the costs claimed by the applicant (\$73,289) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
STI-P3 tanks & fiberglass piping	\$17,922	36%(1)	\$ 6,452
Spill & Overflow Prevention:			
Spill containment basins	690	100	690
Overflow alarm	170	100	170
Automatic shutoff valve	880	100	880
Leak Detection:			
Tank monitor	7,371	90 (2)	6,634
Turbine leak detectors	4,778	100	4,778
Monitoring wells	280	100	280
Stage II vapor recovery	4,000	100	4,000
Labor & materials	<u>37,198</u>	<u>100</u>	<u>37,198</u>
Total	\$73,289	83%	\$61,082

- (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 \$17,922 and the bare steel system is \$11,548, the resulting portion of the eligible tank and piping cost allocable to pollution control is 36%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 83%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$73,289 with 83% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3401.

Barbara J. Anderson:ew
(503) 229-5870
April 4, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Tim and Lori Van Leeuwen
30466 Creek Bend Road
Halsey, Oregon 97348

The applicant owns and operates a grass seed farm operation in Halsey, 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 144' x 116' x 22' bowstring truss, metal clad, grass seed straw storage shed located at 30466 Creek Bend Road, Halsey, Oregon. The land and buildings are owned by the applicant.

Claimed facility cost: \$72,712
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicants have 1,285 perennial and 275 annual acres of grass seed under cultivation. Prior to contracting with custom balers for straw removal, the applicants open field burned as many of their fields as the weather and smoke management program permitted.

Prior to straw storage shed construction the applicants experienced difficulty in relying on the dependability of the custom balers. "Putting up the building allowed [them] to line up a reputable and reliable exporter who bales the straw, stores it in the building and markets it to Japan during the winter and spring as the demand dictates." The applicant provides the storage building in exchange for the baling and removal services. This arrangement has removed an average of 682 acres from open field burning over the last two years. The applicant projects an additional 150-250 acres in 1991 will be removed from open field 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 May 15, 1989, and the application for final certification was found to be complete on March 26, 1991. The application was submitted within two years of substantial completion of the facility. The request for preliminary certification was approved on April 16, 1989.

5. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 the weather enabling the applicant to secure dependable straw removal services.

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

There is no annual percent return on the investment due to the negative average annual cash flow.

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 \$2,088 to annually maintain and operate the facility. These costs were considered in the return on investment calculation.

The applicants did not include any land costs, recycled used materials for some of the construction, and did much of the site improvement and parts fabrication.

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 for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- 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. Reviewer's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$72,712, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-3402.

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

JB:bmtc3402
March 27, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Roy A. Bowers & Sons, Inc.
22009 Coburg Road
Harrisburg, OR 97446

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a New Holland 858 round baler and a New Holland 216 28' rake, located at 22009 Coburg Road, Harrisburg, Oregon. The equipment is owned by the applicant.

New Holland 858 round baler \$11,203.00
New Holland 216 28' rake \$16,003.75

Claimed equipment cost: \$27,206.75
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 2,500 perennial and 1,700 annual acres of grass seed under cultivation. Prior to purchasing straw removal equipment, the applicant open field burned as many of his acres as the weather and smoke management program permitted.

The applicant states that with the 28' rake and round baler open field burning has been reduced by at least 350 acres as the straw is now removed from the fields and stored for later use or sale.

4. Procedural Requirements

The equipment is governed by ORS 463.150 through 463.190, and by OAR Chapter 340, Division 16. The equipment has met all statutory deadlines in that:

Purchase of the equipment was substantially completed on March 10, 1991, and the application for final certification was found to be complete on March 27, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment is used to recover and convert waste products into a salable or usable commodity.

The equipment promotes the conversion of a waste product (straw) into a usable commodity by providing protection from the weather allowing later use or sale.

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

The actual cost of the claimed equipment (\$27,206.75) divided by the average annual cash flow (\$960) equals a return on investment factor of 28.3. Using Table 1 of OAR 340-16-030 for a life of 10 years, the annual percent return on investment is 0%. Using the annual percent return of 0% and the reference annual percent return of 18.3%, 100% is allocable to pollution control.

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 purchase of the equipment.

There is an increase in operating costs of \$2,240 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$27,206.75, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3403.

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

JB:bmTC3403
March 27, 1991

5. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 the weather.

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

The actual cost of the claimed facility (\$79,000) divided by the average annual cash flow (\$3,120) equals a return on investment factor of 25.32. Using Table 1 of OAR 340-16-030 for a life of 30 years, the annual percent return on investment is 1.25%. Using the annual percent return and the reference annual percent return of 18.3%, 93% is allocable to pollution control.

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 \$1,380 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 93%.

6. Summation

- a. The facility was constructed in accordance with all regulatory deadlines.
- b. The facility is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The facility complies with DEQ statutes and rules.
- d. The portion of the facility that is properly allocable to pollution control is 93%.

7. Reviewer's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$79,000, with 93% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-3490.

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

JB:bm/tc3490
May 14, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Clyde Montgomery
3246 Willetta Place SW
Albany, Oregon 97321

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Rear's Manufacturing Company Grass-vac John Deere Conversion, located at 32410 Highway 99E, Tangent, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: \$26,307
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 2,200 perennial and 500 annual acres under grass seed cultivation. Prior to contracting with custom balers and purchasing grass-vacs, the applicant states that he open field burned as much acreage as the weather and smoke management program permitted.

The applicant provides storage to the custom baler in exchange for the raking, baling, compressing and shipping of the straw left in his grass seed fields after harvest. The applicant follows the custom baler with the grass-vac on 700 acres. The grass-vac vacuums up the remaining straw, chaff and seeds eliminating the need for open field burning and/or propane flaming. The applicant intends to increase the acreage treated with the grass-vac by 200 acres during the 1991 season and thereafter.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on October 1, 1989, and the application for final certification was found to be

complete on March 29, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment 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. The loose straw, chaff and seeds gathered by the equipment has been stack burned previously. The applicant intends to experiment with composting beginning this season to reduce or eliminate stack burning.

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

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 purchase of the equipment.

There is an increase in operating costs of \$1,000 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in CRS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$26,307, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3405.

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

JB:bmTC3405
March 29, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Clyde Montgomery
3246 Willetta Place SW
Albany, Oregon 97321

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Rear's Manufacturing Company Grass-vac John Deere Conversion, located at 32410 Highway 99E, Tangent, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: \$24,200
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 2,200 perennial and 500 annual acres under grass seed cultivation. Prior to contracting with custom balers and purchasing grass-vacs, the applicant states that he open field burned as much acreage as the weather and smoke management program permitted.

The applicant provides storage to the custom baler in exchange for the raking, baling, compressing and shipping of the straw left in his grass seed fields after harvest. The applicant follows the custom baler with the grass-vac on 700 acres. The grass-vac vacuums up the remaining straw, chaff and seeds eliminating the need for open field burning and/or propane flaming. The applicant intends to increase the acreage treated with the grass-vac by 200 acres during the 1991 season and thereafter.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on October 1, 1989, and the application for final certification was found to be

complete on March 29, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment 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. The loose straw, chaff and seeds gathered by the equipment has been stack burned previously. The applicant intends to experiment with composting beginning this season to reduce or eliminate stack burning.

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

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 purchase of the equipment.

There is an increase in operating costs of \$1,000 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$24,200, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3406.

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

JB:bmTC3406
March 29, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

George VanLeeuwen, Owner
George VanLeeuwen Farm
27070 Irish Bend Loop
Halsey, Oregon 97348

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a New Holland 858 round baler, located at 27070 Irish Bend Loop, Halsey, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: \$10,600
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 590 perennial and 275 annual acres under grass seed cultivation. Prior to purchasing straw removal equipment, the applicant open field burned as much of his acreage as the weather and smoke management program permitted.

Initially, the applicant relied on custom balers to remove the straw from the fields. The new round baler enables the applicant to remove the straw even when commercial balers are not available or the straw becomes unmarketable due to rain damage. The applicant states that 408 acres of orchardgrass will be removed from open field burning using the round baler.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on April 30, 1989, and the application for final certification was found to be complete on March 28, 1991. The application was submitted within two

years of substantial purchase of the equipment. Including a 30 day waiver, the request for preliminary certification was approved on April 20, 1989.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment is used to recover and convert waste products into a salable or usable commodity.

The equipment promotes the conversion of a waste product (straw) into a usable commodity by providing a method of removal from the fields as custom balers were found to be unreliable.

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

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 purchase of the equipment.

There is an increase in operating costs of \$500 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$10,600, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3407.

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

JB:bmTC3407
March 29, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Norm's Auto Repair
112 Main Street
Springfield, Oregon 97477

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Springfield, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 5 years.

Claimed Facility Cost: \$2400.00
(Costs have been documented)

3. 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 the facility was determined substantially completed on April 30, 1990, and the application for certification was filed on March 26, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$4.32/pound. The applicant estimated an annual coolant recovery rate of 60 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$2400.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3408.

Jerry Coffey:JC
(503) 239-8644
May 15, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

John Weisz, President
Flying W Ranch, Inc.
14905 Butteville Road NE
Gervais, Oregon 97026

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Deutz-Fahr round baler, Kello Built #225 disk, and a used John Deere 8630 200hp tractor, located at 14905 Butteville Road NE, Gervais, Oregon. The equipment is owned by the applicant.

Deutz-Fahr round baler	\$11,500
Kello Built #225 disk	28,500
Used John Deere 8630 tractor	32,000

Claimed equipment cost: \$72,000
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 1,200 acres of perennial grasses under cultivation. Approximately 600 acres are located within the mile wide fire safety buffer zone along Interstate 5. Open field burning is prohibited within the first 1/4 mile to each side of the freeway and severely limited within the adjacent 1/4 mile sections. Propane flaming within the fire safety buffer zone is subject to stringent regulations. Prior to fire safety buffer zone rule adoption (Sept., 1988), the applicant open field burned his grass seed acreage located along the freeway.

To continue grass seed production along I-5, the applicant purchased the round baler to remove straw from the fields, the #225 disk to incorporate the full load of straw back into the soil when changing crop stands, and the 200hp tractor to adequately power the disk. The

applicant states that the equipment has no other purpose on his farm than to provide an alternative to open field burning for the 600 acres along the I-5 freeway.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on October 1, 1990, and the application for final certification was found to be complete on April 23, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; by reducing the maximum acreage to be open burned in the Willamette Valley as required in OAR 340-25-013; 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 equipment 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 equipment 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. The straw removed by the round baler is stack burned, the #225 disk returns the full load of straw back into the soil when a crop stand is terminated.

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

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 purchase of the equipment.

There is an increase in operating costs of \$48,727.50 to annually maintain and operate the equipment. 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 equipment properly allocable to the prevention, control or reduction of air pollution.

The applicant claims that approximately 50% of the acreage located within the fire safety buffer zone that was not burned last year was lost due to March Fly, Slug, and sod web worm infestations.

The established average annual operating hours for tractors is set at 450 hours. To obtain a total percent allocable, the annual operating hours per implement used in reducing acreage open field burned is as follows:

<u>Perennial</u>	<u>Acres</u>	<u>Acres/Hr</u>	<u>Annual</u> <u>Operating</u> <u>Hours</u>
<u>Implement</u>	<u>Worked</u>		
#225 disk	1000 (200x5)	7	143

The total annual operating hours of 143 divided by the average annual operating hours of 450 produces a percent allocable of 32%.

<u>Equipment</u>	<u>Cost</u>	<u>Percent</u> <u>Allocable</u>	<u>Amount</u> <u>Allocable</u>
Deutz-Fahr round baler	\$11,500	100%	\$11,500
Kello Built #225 disk	\$28,500	100%	\$28,500
Used JD 8630 tractor	\$32,000	32%	\$10,240
Total	\$72,000	70%	\$50,240

The actual cost of the equipment properly allocable to pollution control as determined by using these factors is 70%.

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 70%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$72,000, with 70% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3409.

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

JB:bmTC3409
May 1, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Don & Laura Christensen
Christensen Farms
16201 SW Christensen Road
McMinnville, Oregon 97128

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Rear's 12' Grass-vac, located at 17215 SW Christensen Road, McMinnville, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: \$47,341
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 1,455 acres under perennial grass seed cultivation. Prior to beginning a straw removal program the applicant states he open field burned as much of his acreage as the weather and smoke management program permitted.

In recent years the applicant has acquired equipment and facilities that aid him in reducing open field burning. The Grass-vac was purchased to remove the remaining straw residue, chaff and seeds after the fields had been custom baled or baled off by the applicant. The Grass-vac re-clips the straw, clips any regrowth and vacuums up the residue eliminating the need for open field burning on approximately 1000 acres.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on September 30, 1990, and the application for final certification was found to be

complete on April 3, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment 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. The Grass-vac removes straw residue, chaff and seeds from the field in loaf form that is stack burned.

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

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 purchase of the equipment.

There is an increase in operating costs of \$25,561 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$47,341, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3410.

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

JB:bmTC3410
April 26, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Don & Laura Christensen
Christensen Farms
16201 SW Christensen Road
McMinnville, Oregon 97128

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a John Deere 4955, 200 hp tractor, located at 17215 SW Christensen Road, McMinnville, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: \$68,000
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 1,455 acres under perennial grass seed cultivation. Prior to beginning a straw removal program the applicant states he open field burned as much of his acreage as the weather and smoke management program permitted.

In recent years the applicant has acquired equipment and facilities that enable him to engage in alternative practices to open field burning. The alternative practices of plowing, baling and vacuuming require a power source. The applicant has determined the John Deere 4955, 200 hp tractor is sized right to power the assorted equipment. The applicant claims the tractor and equipment removes approximately 1,400 of his perennial grass seed acres and 1,600 of his neighbors perennial grass seed acres from open field burning.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on January 17, 1991, and the application for final certification was found to be

complete on April 3, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment is used to recover and convert waste products into a salable or usable commodity.

The equipment promotes the conversion of a waste product (straw) into a salable commodity by providing power to the baling equipment that packages the straw for storage.

AND

The equipment does not recover or convert waste products into a salable or usable commodity when providing the power source for the plow and Grass-vac. The plow turns the straw residue under the soil and the Grass-vac removes the straw residue, chaff and seeds in loaf form for stack burning.

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

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 purchase of the equipment.

There is an increase in operating costs of \$13,244 to annually maintain and operate the equipment. 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 equipment properly allocable to the prevention, control or reduction of air pollution.

The established average annual operating hours for tractors is set at 450 hours. To obtain a total percent allocable, the annual operating hours per implement used in reducing acreage open field burned is as follows:

Perennial Acreage			Annual
<u>Implement</u>	<u>Acres worked</u>	<u>Acres/Hour</u>	<u>Operating Hours</u>
Plow	300	7	43
Grass-Vac	1,400	5	280
Baler	600	4	150
Total annual operating hours			473

The total annual operating hours of 473 exceeds the average annual operating hours of 450 producing a percent allocable of 100%.

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

6. Summation

- The equipment was purchased in accordance with all regulatory deadlines.
- The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- The equipment complies with DEQ statutes and rules.
- The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$68,000, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3411.

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

JB:bmTC3411
April 26, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Don & Laura Christensen
Christensen Farms
16201 SW Christensen Road
McMinnville, Oregon 97128

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a John Deere 2800 6-18 plow, located at 17215 SW Christensen Road, McMinnville, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: \$11,400
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 1,455 acres under perennial grass seed cultivation. Prior to beginning a straw removal program the applicant states he open field burned as much of his acreage as the weather and smoke management program permitted.

The applicant claims that not burning perennial grasses shortens the stand life by approximately one-third from six years to four years. The rotation out of the old stand into the new stand was accomplished by open field burning and discing the ground - by purchasing the plow the applicant can eliminate the transition year burning and facilitate the shorter rotation demands on approximately 300 acres annually.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on January 17, 1991, and the application for final certification was found to be complete on April 3, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment 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. The plow is used to turn under straw residue left by non-burning practices to accommodate shorter rotational cycles between perennial grass stands.

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

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 purchase of the equipment.

There is an increase in operating costs of \$6,000 to annually maintain and operate the equipment. 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 equipment properly allocable to the prevention, control or reduction of air pollution.

The applicant states that the plow can be used for other crops on the farm. Applicant cultivates 1,455 acres of perennial grasses and 100 acres of vegetable seeds. It is reasonable to assume the applicant could use the plow 7% of time used for activities not related to reducing open field burning.

The actual cost of the equipment properly allocable to pollution control as determined by using these factors is 93%.

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 93%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$11,400, with 93% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3412.

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

JB:bmTC3412
April 4, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Oak Park Farms, Inc
Norman Coon, Vernon Coon
31310 Peoria Rd
Shedd, Oregon 97377

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Rear's Manufacturing Company converted Hesston Loafer 60A Grass-Vac, located at 31310 Peoria Rd., Shedd, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: \$35,438.00
(Accountant's Certification was provided.)

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

The applicants have 3,000 perennial and 300 annual acres under grass seed cultivation. Previous to purchase and modification of the straw handling and removal equipment, the applicants primarily relied on open field burning to sanitize their fields.

With this Grass-vac the applicants have reduced open burning by 1,500 perennial acres and expect to only open burn that acreage in cases of disease outbreak. After the straw is raked and custom baled, the Grass-Vac clips the stubble and vacuums the remaining residue removing approximately 99% of all debris. Resulting loafs are usually stack burned although the applicant is experimenting with composting.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on March 15, 1991, and the application for final certification was found to be complete on April 5, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment 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. Currently, the applicant is burning the resulting straw loafs but is also experimenting with composting techniques.

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

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 purchase of the equipment.

There is an increase in operating costs of \$16,500 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$35,438.00, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3414.

Dick Abernathy, Operations Coordinator
Smoke Management Program
Natural Resources Division
Oregon Department of Agriculture
(503) 378-6792

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

H. T. Rea Farming Corp.
Rt. 4 Box 616
Milton-Freewater, OR 97862

The applicant owns and operates a farm at Rt. 4 Box 616, Milton-Freewater OR.

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

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of secondary containment for two aboveground storage tanks.

Claimed facility cost (Documentation of cost was provided)	\$ 19,139
---	-----------

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on December 31, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on December 31, 1989.

4. Evaluation of Application

- a. The facility is eligible because the sole purpose of the facility is to prevent pollution of soil and water. This is accomplished by preventing releases into soil or water. 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 two steel underground storage tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

In accordance with federal law, the applicant installed secondary containment.

The applicant reported that soil testing was performed at the time of tank removal and no contamination was found.

Based on information currently available, the applicant is in compliance with federal law in that a Spill Prevention Control and Countermeasure (SPCC) plan is on file at the facility.

The Department concludes that all of the costs claimed by the applicant (\$19,139) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 any alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Secondary containment	\$13,310	100%	\$13,310
Labor & material	<u>5,829</u>	<u>100</u>	<u>5,829</u>
Total	\$19,139	100%	\$19,139

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 sole purpose of the claimed facility is to prevent pollution of soil and water. This is accomplished by preventing releases in soil or water. 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 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$19,139 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3415.

Barbara J. Anderson:ew
(503) 229-5870
April 4, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Vergen Chrysler Plymouth Dodge, Inc.
1475 Ocean Blvd.
Coos Bay, Oregon 97420

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Coos Bay, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 3 years.

Claimed Facility Cost: \$2022.30
(Costs have been documented)

3. 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 the facility was determined substantially completed on December 18, 1990, and the application for certification was filed on March 29, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$4.16/pound. The applicant estimated an annual coolant recovery rate of 108 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$2022.30 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3416.

Jerry Coffey:JC
(503) 239-8644
May 15, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Laughlin-Hall, Inc.
PO Box 767
McMinnville, OR 97128

The applicant owns and operates a gas station and carwash at 1437 N. Baker, McMinnville OR, facility no. 349.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the new installation of three doublewall fiberglass tanks, doublewall fiberglass piping, spill containment basins, tank monitor, line leak detectors, overflow alarm, automatic shutoff valves, monitoring wells and Stage I & II vapor recovery.

Claimed facility cost	\$144,274
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on September 14, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on September 15, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 property on which underground storage tanks had been decommissioned and removed in the previous year by the previous owner.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Doublewall fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins, overflow alarm & automatic shutoff valves.
- 3) For leak detection - Tank monitor, line leak detectors & monitoring wells.

The applicant also installed Stage I & II vapor recovery equipment and piping.

The applicant reported that soil contamination exists at the site and has been reported to DEQ.

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.

The Department concludes that the eligible facility cost for the project is \$124,153. This represents a difference of \$20,121 from the applicant's claimed cost of \$144,274 due to a determination by the Department that the cost of rock, concrete/asphalt and dirt hauling to install tanks and piping at a new business facility is not eligible pursuant to the definition of a pollution control facility in ORS 468.155 because it would have been incurred regardless of pollution control requirements.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Doublewall fiberglass tanks & piping	\$43,894	52%(1)	\$22,825
Spill & Overflow Prevention:			
Spill containment basins	968	100	968
Overflow alarm	175	100	175
Automatic shutoff valve	2,019	100	2,019
Leak Detection:			
Tank monitor	10,315	90 (2)	9,284
Line leak detectors	510	100	510
Monitoring wells	3,900	100	3,900
Stage I & II vapor recovery	2,000	100	2,000
Labor & materials	<u>60,372</u>	<u>100</u>	<u>60,372</u>
Total	\$124,153	82%	\$102,053

(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 \$43,894 and the bare steel system is \$21,202, the resulting portion of the eligible tank and piping cost allocable to pollution control is 52%.

(2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 82%.
6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$124,153 with 82% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3421.

Barbara J. Anderson:ew
(503) 229-5870
April 4, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Robert W. Byram
2666 SW Reindeer
Redmond, OR 97756

The applicant owns and operates a service station and carwash at 516 SW 5th, Redmond OR, facility no. 2467.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three STI-P3 tanks and fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, overflow alarm, automatic shutoff valves, monitoring wells and Stage II vapor recovery piping.

Claimed facility cost \$ 77,231
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on March 6, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on March 6, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 five steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment. Four tanks were removed. One used oil tank was retained.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - STI-P3 tanks and fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, overflow alarms & automatic shutoff valves.
- 3) For leak detection - Tank monitor, turbine leak detectors & monitoring wells.

The applicant also installed piping for Stage II vapor recovery.

The applicant reported that soil testing was performed at the time of tank removal and no contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$77,231) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 if any alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
STI-P3 tanks & fiberglass piping	\$15,348	36%(1)	\$ 5,525
Spill & Overfill Prevention:			
Spill containment basins	903	100	903
Overfill alarm	300	100	300
Automatic shutoff valve	1,368	100	1,368
Leak Detection:			
Tank monitor	5,669	90 (2)	5,102
Turbine leak detectors	1,022	100	1,022
Monitoring wells	180	100	180
Stage II vapor recovery	1,000	100	1,000
Labor & materials	<u>51,441</u>	<u>100</u>	<u>51,441</u>
Total	\$77,231	87%	\$66,841

(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 \$15,348 and the bare steel system is \$9,896, the resulting portion of the eligible tank and piping cost allocable to pollution control is 36%.

(2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 87%.
6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$77,231 with 87% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3422.

Barbara J. Anderson:ew
(503) 229-5870
April 4, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicants

Daniel or Jo Ann Keeley, Owners
5975 Buyserie Rd. NE
St. Paul, Oregon 97137

The applicants own and operate a grass seed farm operation in St. Paul, Oregon.

Application was made for a tax credit for air pollution control facilities.

2. Description of Claimed Facilities

The facilities described in this application are: a subsurface corrugated polyethylene field drain tile system (13,896 ft), a used John Deere model F flail chopper, a used Howard model M1100 rototiller, and a used Massey Ferguson model 1150 diesel farm tractor. All are located at 5975 Buyserie Rd. NE, St. Paul, Oregon. The land, drain tile system, and equipment are owned by the applicants.

Claimed facility and equipment cost:

Drain Tile System	\$8,041.75
Flail Chopper	1,000.00
Rototiller	650.00
Tractor	<u>7,250.00</u>
Total	\$16,941.75

(The applicants provided copies of purchase receipts)

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

The applicants have 102 acres of perennial grass seed under cultivation. Prior to purchase of the above facilities, the applicants relied entirely on open field burning to sanitize their fields.

Installation of the drain tile system has enabled 20 acres to be drained allowing a complete conversion to alternative crops (legume, douglas fir, and filberts). The Agricultural Stabilization and Conservation Service has determined that the drained land is not classified as protected "Wet Lands".

The flail chopper, rototiller and tractor will be used to incorporate the straw into the soil on the remaining acreage during crop rotation years, i.e. every other year. Straw waste will be chopped as fine as possible by going over the fields twice with the flail chopper followed by plowing and tilling. On the non-rotation years straw will be

open burned or baled and removed from the field for sale or stack burning. Consequently, open burning of the remaining 82 acres will be reduced by 50% (every other year vs. every year).

Purchase of the drainage system and farming equipment will reduce open burning overall by 60%.

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 drainage system and purchase of the equipment was substantially completed on January 26, 1991. The application for final certification was found to be complete on April 22, 1991. The application was submitted within two years.

5. Evaluation of Application

- a. The facilities are eligible because their principal purpose is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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." and (C): Drainage tile installations which will result in a reduction of grass seed acreage under production.

- 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 facilities do not recover or convert waste products into a salable or usable commodity. The waste straw is chopped and tilled into the soil during crop rotation years.

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

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 methods chosen are accepted methods for reducing air pollution and they are 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 \$643.29 to annually maintain and operate the facilities. 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.

The established average annual operating hours for tractors is set at 450 hours. To obtain a total percent allocable, the annual operating hours per implement used in reducing acreage open field burned is as follows:

<u>Implement</u>	<u>Acres Worked</u>	<u>Tractor Capacity acre/hr</u>	<u>Annual Operating Hours</u>
Flail Chopper	164 (82x2)	6	27
Rototiller	82	3	27
Plow	82	6	<u>14</u>
Annual Operating Hours			68

The total annual operating hours of 68 divided by the average annual operating hours of 450 produces a percent allocable of 15% or \$1,087.50. The percent allocable for the tractor (\$1,087.50) plus the percent allocable for the straw chopper of 100% (\$1,000) plus the percent allocable for the rototiller (used 50% of the time on other crops) of 50% (\$325) plus the cost of the drain tile system of 100% (\$8,041.75) equals \$10,454.25. Total percent allocable (\$10,454.25) divided by the claimed facility cost (\$16,941.75) produces a final percent allocable of 62%.

The actual cost of the facilities properly allocable to pollution control as determined by using these factors is 62%.

6. Summation

- a. The facilities were purchased in accordance with all regulatory deadlines.

- b. The facilities are eligible for final tax credit certification in that their principal purpose is to reduce a substantial quantity of air pollution and they accomplished this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The facilities comply with DEQ statutes and rules.
- d. The portion of the facilities that are properly allocable to pollution control is 62%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$16,941.75 with 62% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3423.

Dick Abernathy, Operations Coordinator
Smoke Management Program
Natural Resources Division
Oregon Department of Agriculture
(503) 378-6792

da/tc3423.feq/sm
May 1, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Dave & Ellen Vanasche
Vanasche Farms
36130 NW Wren Road
Cornelius, Oregon 97113

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Rear's 30' propane field flamer and a Case-International 22'-8" Tandem Disk #596, located at 36130 NW Wren Road, Cornelius, Oregon. The equipment is owned by the applicant.

Rear's propane flamer	\$ 4,680
Case tandem disk	\$20,000

Claimed equipment cost: \$24,680
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 730 acres of perennial grass seed under cultivation. Prior to purchasing straw removal, straw handling and alternative sanitization equipment the applicant states he open field burned as many acres as the weather and smoke management program permitted.

The Rear's propane flamer provides sanitization on 600 acres of perennial grass fields that the applicant bales off. The Case tandem disk provides incorporation of straw residue on approximately 130 acres where rotation from an old stand to a new stand is required allowing rotation without open field burning.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on July 20, 1990, and the application for final certification was found to be complete on April 11, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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." and (B): "Propane flammers or mobile field sanitizers which are alternatives to open field burning and reduce air quality impacts."

- b. Eligible Cost Findings

In determining the percent of the pollution control equipment 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 equipment 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. The propane flamer provides sanitization of the grass seed fields while the tandem disk incorporates straw residue into the soil between stand rotations.

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

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 purchase of the equipment.

There is no savings or increase in costs as a result of the equipment.

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

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$24,680, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3424.

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

JB:bmTC3424
April 17, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Dave & Ellen Vanasche
Vanasche Farms
36130 NW Wren Road
Cornelius, Oregon 97113

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a John Deere 2955, 35 hp tractor and a John deere 265 loader, located at 36130 NW Wren Road, Cornelius, Oregon. The equipment is owned by the applicant.

John Deere 2955 tractor \$34,000
John Deere 265 loader \$ 7,550

Claimed equipment cost: \$41,550
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 730 acres of perennial grass seed under cultivation. Prior to purchasing straw removal and straw handling equipment, the applicant states he open field burned as many acres as the weather and smoke management program permitted.

The John Deere 2955 tractor provides the power for the applicant's baler enabling him to package the straw at the field. The John Deere 265 loader enables the applicant to off-load the bales at the compressing and storage site. This straw removal process removes approximately 600 acres from open field burning each year.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on February 20, 1991, and the application for final certification was found to be

complete on April 11, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment is used to recover and convert waste products into a salable or usable commodity.

The equipment promotes the conversion of a waste product (straw) into a salable commodity by providing packaging of the straw and bale handling capabilities.

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

There is no annual percent return on the investment as applicant projects no annual cash flow.

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 purchase of the equipment.

There is no savings or increase in costs as a result of the equipment. Applicant projects that gross annual income from

straw sales is offset by baling, transporting, compressing, storing and delivery expenses.

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

The established average annual operating hours for tractors is set at 450 hours. To obtain a total percent allocable, the annual operating hours per implement used in reducing acreage open field burned is as follows:

Perennial

<u>Implement</u>	<u>Acres Worked</u>	<u>Ac/Hr</u>	<u>Annual Operating hours</u>
baler	600	4	<u>150</u>
Total annual operating hours			150

The total annual operating hours of 150 divided by the average annual operating hours of 450 produces a percent allocable of 33%.

<u>Equipment</u>	<u>Claimed Cost</u>	<u>Percent Allocable</u>	<u>Allocable Cost</u>
JD 2955 tractor	\$34,000	33%	\$11,220
JD 265 loader	<u>\$ 7,550</u>	<u>100%</u>	<u>\$ 7,550</u>
Total	\$41,550	45%	\$18,770

The actual cost of the equipment properly allocable to pollution control as determined by using these factors is 45%.

6. Summation

- The equipment was purchased in accordance with all regulatory deadlines.
- The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- The equipment complies with DEQ statutes and rules.
- The portion of the equipment that is properly allocable to pollution control is 45%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$41,550, with 45% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3425.

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

JB:bmTC3425
April 17, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Clatskanie Mini-mart
Garold L. Settje
260 Columbia River Hwy.
Clatskanie, OR 97016

The applicant owns and operates a convenience store with gas at 260 Columbia River Hwy., Clatskanie OR, facility no. 2832.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three composite tanks and double wall fiberglass piping, spill containment basins, tank monitor, automatic shutoff valves and line leak detectors, monitoring wells and sumps.

Claimed facility cost \$ 71,772
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on December 9, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on December 9, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Composite tanks & fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff valves & sumps.
- 3) For leak detection - Tank monitor, line leak detectors & monitoring wells.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found. Cleanup is in progress.

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.

The Department concludes that the eligible facility cost for the project is \$83,082. This represents a difference of \$11,310 from the applicant's claimed cost of \$71,772 due to a determination by the Department that the cost of the project should reflect the total cost of tanks, piping and tank monitor rather than partial costs as submitted by the applicant.

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 also considered tank lining. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Composite tanks & fiberglass piping	\$17,727	39%(1)	\$ 6,914
Spill & Overfill Prevention:			
Spill containment basins	543	100	543
Automatic shutoff valve	759	100	759
Sumps	1,845	100	1,845
Leak Detection:			
Tank monitor	5,057	90	4,551
Line leak detectors	444	100	444
Monitoring wells	160	100	160
Labor & materials	<u>56,547</u>	<u>100</u>	<u>56,547</u>
Total	\$83,082	86%	\$71,763

(1) The Department has determined the percent allocable on the cost of a corrosion protected piping system by using a formula based on the difference in cost between the protected system and an equivalent steel system as a percent of the protected system. Applying this formula to the costs presented by the applicant, where the protected piping system cost is \$17,727 and the steel system is \$10,804, the resulting portion of the eligible piping cost allocable to pollution control is 39%.

(2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 86%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$83,082 with 86% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3426.

Barbara J. Anderson:ew
(503) 229-5870
April 11, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

G & S Chevron
Gary L. & Sandra L. Powell
1010 - 6th Street
Umatilla, OR 97882

The applicant owns and operates a service station at 1010 - 6th Street, Umatilla OR, facility no. 6333.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of spill containment basins, tank monitor and line leak detectors.

Claimed facility cost	\$ 13,194
(Documentation of cost was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on June 23, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on June 23, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 three steel tanks and piping holding motor fuel and one used oil steel tank and piping, all of which have no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For spill and overflow prevention - Spill containment basins.
- 2) For leak detection - Tank monitor and line leak detectors.

The applicant reported that the soil was inspected during construction of the project and no evidence of contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$13,194) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the most effective and affordable. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Spill & Overfill Prevention:			
Spill containment basins	\$ 690	100%	\$ 690
Leak Detection:			
Tank monitor	5,372	90	4,835
Line leak detectors	573	100	573
Labor & materials	<u>6,559</u>	<u>100</u>	<u>6,559</u>
Total	\$13,194	96%	\$12,657

- (1) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 96%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$13,194 with 96% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3427.

Barbara J. Anderson:ew
(503) 229-5870
April 12, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Scott's Inc.
2230 West Burnside
Portland, Oregon 97210

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Portland, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 3 years.

Claimed Facility Cost: \$3000.00
(Costs have been documented)

3. 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 the facility was determined substantially completed on April 8, 1991, and the application for certification was filed on April 10, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$5.50/pound. The applicant estimated an annual coolant recovery rate of 90 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$3000.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3428.

Jerry Coffey:JC
(503) 239-8644
May 15, 1991

State of Oregon
Department of Environmental Quality
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Sunset Fuel Company, Inc.
PO Box 42287
Portland, OR 97242

The applicant owns and operates a cardlock station at 6230 SW Macadam, Portland OR, facility no. 8111.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of epoxy lining in four steel tanks, spill containment basins, tank monitor and overflow alarm.

Claimed facility cost \$ 62,369
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on November 16, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on November 16, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 underground storage tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Epoxy tank lining.
- 2) For spill and overflow prevention - Spill containment basins and overflow alarm.
- 3) For leak detection - Tank monitor.

The applicant reported that the soil was inspected during construction of the project and no significant contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$62,369) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 also considered replacing the tanks. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Epoxy tank lining	\$44,725	100%	\$44,725
Spill & Overfill Prevention:			
Spill containment basins	2,500	100	2,500
Overfill alarm	182	100	182
Leak Detection:			
Tank monitor	6,994	90 (1)	6,295
Labor & materials	<u>7,968</u>	<u>100</u>	<u>7,968</u>
Total	\$62,369	99%	\$61,670

(1) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 99%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$62,369 with 99% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3429.

Barbara J. Anderson:ew
(503) 229-5870
April 22, 1991

State of Oregon
Department of Environmental Quality
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

University Service Center
1905 Agate
Eugene, Oregon 97403

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Eugene, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 7 years.

Claimed Facility Cost: \$2869.00
(Costs have been documented)

3. 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 the facility was determined substantially completed on April 4, 1991, and the application for certification was filed on April 12, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$5.68/pound. The applicant estimated an annual coolant recovery rate of 240 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$2869.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3430.

Jerry Coffey:JC

(503) 239-8644

May 15, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Warden Farms
Tom Warden, Judy Warden
29785 Smith Loop
Corvallis, Oregon 97333

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a New Holland model 858 round baler, located at 29785 Smith Loop, Corvallis, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: \$9500.00
(The applicant provided a copy of the purchase check)

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

The applicants have 818 perennial and 900 annual acres under grass seed cultivation. Prior to purchasing the baler, perennial acreage was open field burned to the maximum extent allowed by seasonal weather.

The applicants are able to reduce open field burning by approximately 350 acres using the equipment to bale the straw. The straw bales are removed from the fields and roadsided or stack burned. Fields are selectively sanitized by propane flaming.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on July 1, 1989 and the application for final certification was found to be complete on April 22, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment 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. The baled straw is removed from the field and roadsided or stack burned.

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

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 purchase of the equipment.

There is an increase in operating costs of \$5470.00 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$9500, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3431.

Dick Abernathy, Operations Coordinator
Smoke Management Program
Natural Resources Division
Oregon Department of Agriculture
(503) 378-6792

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Neils Jensen
6532 Howell Prairie Road
Silverton, Oregon 97381

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Harrel 3608 8 bottom, 18" plow, located at 1786 Falbot Road, Jefferson, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: \$13,500
(The applicant provided copies of proof of purchase.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 530 acres of perennial grasses under cultivation. During the last two seasons, the applicant has refrained from open field burning. Prior to acquiring straw handling and processing equipment, the applicant open field burned as much acreage as the weather and smoke management program permitted.

With the purchase of the plow the applicant will be able to adequately cultivate his fields between crop stand rotations. After harvest, the applicant bales the fields, flail chops the remaining stubble, propanes, discs twice, and deep plows any remnant residue or seeds. The process eliminates approximately 230 acres from open field burning each year.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on October 22, 1990, and the application for final certification was found to be complete on April 23, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment 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. The plow enables the applicant to turn remnant residue and seeds deep into the soil.

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

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 purchase of the equipment.

There is an increase in operating costs of \$1,748 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Eased upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$13,500, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3432.

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

JB:bmTC3432
April 24, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

John Singer
21875 Butteville Road
Aurora, OR 97002

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a new 12 foot grass Vac with side dump attachment (LCH125954) and a converted used 1971 Ford tilt cab model C-700, 2 ton truck designed to collect/spread residue from grass seed fields, located at 21875 Butteville Road, Aurora, Oregon. The equipment is owned by the applicant.

Claimed equipment cost:

Vacuum with Dump	\$23,100
Truck with Spreader	<u>11,126</u>
Total	\$34,226

(Accountant's Certification was provided.)

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

The applicant has 350 acres of perennial grasses under cultivation. In 1988, the applicant open field burned 200 acres and baled and propaned 100 acres. In 1989, he open field burned 150 acres and baled and propaned 150 acres.

Beginning with the 1990 season, the applicant is trying a new practice of flail chopping the bulk straw, vacuuming it from the field, chopping it again, blowing it into a trailing truck, and spreading it out on another field to be plowed into the soil. The applicants did not open burn in 1990 and propaned only 40 acres.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on July 1, 1990, and the application for final certification was found to be complete on May 1, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment is used to recover and convert waste products into a salable or usable commodity.

The equipment promotes the conversion of a waste product (straw) into a usable commodity by providing a method to collect clippings and debris from the grass fields and spread it back onto other fields to be turned under for decomposition.

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

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 purchase of the equipment.

There is an increase in operating costs of \$4,643 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$34,226, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3433.

Dick Abernathy, Operations Coordinator
Smoke Management Program
Natural Resources Division
Oregon Department of Agriculture
(503) 378-6792

da/tc3433/sm
May 1, 1991

State of Oregon
Department of Environmental Quality
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Landmark Ford, Inc.
12000 SW 66th Avenue
Tigard, Oregon 97223

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Tigard, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 5 years.

Claimed Facility Cost: \$1980.00
(Costs have been documented)

3. 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 the facility was determined substantially completed on September 14, 1990, and the application for certification was filed on April 15, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$3.26/pound. The applicant estimated an annual coolant recovery rate of 365 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$1980.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3434.

Jerry Coffey:JC
(503) 239-8644
May 15, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Pacific Petroleum Corp.
PO Box 2803
Eugene, OR 97402

The applicant owns and operates a service station at 1690 W. 18th, Eugene OR, facility no. 3299.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of epoxy lining in four steel tanks, spill containment basins and underground preparation for a tank monitor system.

Claimed facility cost \$ 32,380
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed in June, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in June, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 other than line leak detectors.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Epoxy tank lining.
- 2) For spill and overflow prevention - Spill containment basins.
- 3) For leak detection - Underground preparation for a tank monitor system.

The applicant reported that the soil was inspected during construction of the project and no evidence of contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$32,380) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods were available at a comparable cost. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Epoxy tank lining	\$26,488	100%	\$26,488
Spill & Overfill Prevention:			
Spill containment basins	2,200	100	2,200
Leak Detection:			
Underground prep for a tank monitor system	1,200	100	1,200
Labor & materials	<u>2,492</u>	<u>100</u>	<u>2,492</u>
Total	\$32,380	100%	\$32,380

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 and water. This is accomplished by preventing releases in soil or water. 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 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$32,380 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3435.

Barbara J. Anderson:ew
(503) 229-5870
April 16, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Fred Meyer, Inc.
3800 SE 22nd Avenue
Portland, OR 97202

The applicant leases and operates an interstate motor carrier dispatch and maintenance facility at 12108 SE Hwy. 212, Clackamas OR, facility no. 6274.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the new installation of one fiberglass tank, double wall fiberglass piping for the new and two existing tanks, epoxy lining in two existing steel tanks, spill containment basins, tank monitor, turbine leak detectors and an oil/water separator.

Claimed facility cost	\$143,600
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on January 29, 1991 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation January 12, 1991.

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 and water. This is accomplished by preventing releases into soil or water. 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 three steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - One fiberglass tank, fiberglass piping for three tanks and epoxy lining in two steel tanks.
- 2) For spill and overflow prevention - Spill containment basins.
- 3) For leak detection - Tank monitor and turbine leak detectors.

The applicant also installed an oil/water separator.

The applicant reported that the soil was inspected during construction of the project and no evidence of contamination was found.

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.

The Department concludes that the eligible facility cost for the project is \$133,866. This represents a difference of \$9,734 from the applicant's claimed cost of \$143,600 due to a determination by the Department that the cost of labor and material to install an additional tank and piping is not eligible pursuant to the definition of a pollution control facility in ORS 468.155. The Department considers the facility a new tank because of the almost four years between removal and replacement. Moreover, removal occurred before the effective date of federal regulations. The applicant does not concur with the Department's position. (see attached letter.)

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 considered the method chosen to be the most economical. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Fiberglass tank & piping	\$ 18,180	43%(1)	\$ 7,817
Epoxy tank lining	25,540	100	25,540
Spill & Overfill Prevention:			
Spill containment basins	2,664	100	2,664
Leak Detection:			
Tank monitor	6,740	90 (2)	6,066
Turbine leak detectors	133	100	133
Oil/water separator	34,532	100	34,532
Labor & materials	<u>46,077</u>	<u>100</u>	<u>46,077</u>
Total	\$133,866	92%	\$122,829

- (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 \$18,180 and the bare steel system is \$10,379, the resulting portion of the eligible tank and piping cost allocable to pollution control is 43%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 92%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$133,866 with 92% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3437.

Barbara J. Anderson:ew
(503) 229-5870
May 8, 1991

Fred Meyer, Inc.

Attachment to TC-3437
P.O. Box 42121 3800 S.E. 22nd Avenue
Portland, OR 97242
(503) 232-8844 TLX 360415

May 7, 1991

Department of Environmental Quality
Underground Storage Tank Division
811 S.W. 6th
Portland, OR 97284

Attn: Barbara Anderson

Dear Barbara:

As you know, we have filed for tax credit on underground storage tank work that has been done at our Clackamas Distribution Trucking Center.

We understand that DEQ is considering not giving us credit for installing the third tank since we took the original tank out in 1987. We would appeal any decision to not give us the full tax credit. We are a larger corporation facing many decisions all the time. In this particular case, we evaluated as many options as we could, including the future of the trucking business, eliminating the tank farm and relocating the tank farm closer to the pumps. We consider the installation of the third tank to be a replacement tank.

If you have any questions, please call me at 233-6209.

Sincerely yours,

Pamela J. Brown

PAMELA J. BROWN
Assistant Vice President
Director of Environmental Programs

PJB:are

Department of Environmental Quality

RECEIVED
MAY 10 1991

U.S. COMPLIANCE DIVISION

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Western Stations Co.
PO Box 5969
Portland, OR 97228-5969

The applicant owns and operates a retail gasoline outlet at 420 SE 122nd Ave., Portland OR, facility no. 6208.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four steel/fiberglass composite tanks and fiberglass piping, spill containment basins, sumps, tank monitor, automatic shutoff valves, monitoring wells and Stage I & II vapor recovery equipment and piping.

Claimed facility cost \$ 84,935
(Accountant's certification was provided)

Percent allocable to pollution control 78%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on February 1, 1991 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on February 8, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 five steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Steel/Fiberglass composite tanks and fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, sumps and automatic shutoff valves.
- 3) For leak detection - Tank monitor and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and 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.

The Department concludes that all of the costs claimed by the applicant (\$84,935) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods were available. 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.

The applicant estimated that 78% of the claimed facility cost of \$84,935 is allocable to pollution control. The applicant arrived at this estimate by taking 44% of the tank cost, 98% of piping, labor and miscellaneous parts and 90% of tank monitor and setup.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Composite tanks and fiberglass piping	\$32,781	44%(1)	\$14,424
Spill & Overfill Prevention:			
Spill containment basins	796	100	796
Sumps	1,350	100	1,350
Automatic shutoff valves	1,510	100	1,510
Leak Detection:			
Tank monitor	6,416	90 (2)	5,774
Monitoring wells	300	100	300
Stage I & II vapor recovery	3,990	100	3,990
Labor & materials	<u>37,792</u>	<u>100</u>	<u>37,792</u>
Total	\$84,935	78%	\$65,936

(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 \$32,781 and the bare steel system is \$18,293, the resulting portion of the eligible tank and piping cost allocable to pollution control is 44%.

(2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 78%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$84,935 with 78% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3438.

Barbara J. Anderson:ew
(503) 229-5870
April 29, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Western Stations Co.
PO Box 5969
Portland, OR 97228-5969

The applicant owns and operates a retail gasoline outlet at 324 NE "E" Street, Grants Pass OR, facility no. 6267.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three steel/fiberglass composite doublewall tanks, fiberglass piping, spill containment basins, tank monitor, automatic shutoff valves, monitoring wells and Stage I & II vapor recovery equipment and piping.

Claimed facility cost \$ 85,457
(Accountant's certification was provided)

Percent allocable to pollution control 87%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on November 14, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on November 20, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 five steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Steel/Fiberglass composite double wall tanks and single wall fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Tank monitor and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$85,457) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods were available. 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.

The applicant estimated that 87% of the claimed facility cost of \$85,457 is allocable to pollution control. The applicant arrived at this estimate by taking 67% of the tank cost, 98% of piping, labor and miscellaneous parts and 90% of tank monitor and startup.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Double wall composite tanks and fiberglass piping	\$32,830	66%(1)	\$21,668
Spill & Overfill Prevention:			
Spill containment basins	597	100	597
Automatic shutoff valves	1,018	100	1,018
Leak Detection:			
Tank monitor	5,103	90 (2)	4,593
Monitoring wells	300	100	300
Stage I & II vapor recovery	3,987	100	3,987
Labor & materials	<u>41,622</u>	<u>100</u>	<u>41,622</u>
Total	\$85,457	86%	\$73,785

- (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 \$32,830 and the bare steel system is \$11,108, the resulting portion of the eligible tank and piping cost allocable to pollution control is 66%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 86%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$85,457 with 86% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3439.

Barbara J. Anderson:ew
(503) 229-5870
April 29, 1991

State of Oregon
Department of Environmental Quality
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Alberta Body and Paint
6842 NE Union Avenue
Portland, Oregon 97211

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Portland, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 3 years.

Claimed Facility Cost: \$2218.09
(Costs have been documented)

3. 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 the facility was determined substantially completed on April 12, 1991, and the application for certification was filed on April 26, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$5.33/pound. The applicant estimated an annual coolant recovery rate of 144 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$2218.09 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3440.

Jerry Coffey:JC
(503) 239-8644
May 15, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Creswell Commercial Service, Inc.
PO Box 490
Creswell, OR 97426

The applicant owns and operates a service station/snack shop at 66 N. Mill St., Creswell OR, facility no. 2135.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four STI-P3 tanks and fiberglass piping, spill containment basins, tank monitor, monitoring wells, turbine leak detectors, automatic shutoff valves, sumps and Stage I vapor recovery equipment.

Claimed facility cost	\$ 99,697
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed in November, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in November, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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. A fifth tank was previously decommissioned in place.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - STI-P3 tanks and fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff valves and sumps.
- 3) For leak detection - Tank monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I vapor recovery equipment.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that the eligible facility cost for the project is \$112,485. This represents a difference of \$12,788 from the applicant's claimed cost of \$99,697 due to a determination by the Department that the cost of the project should reflect the total cost of tanks and piping.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
STI-P3 tanks & fiberglass piping	\$ 21,740	41%(1)	\$ 8,913
Spill & Overflow Prevention:			
Spill containment basins	870	100	870
Automatic shutoff valves	1,686	100	1,686
Sumps	1,489	100	1,489
Leak Detection:			
Tank monitor	7,416	90 (2)	6,674
Turbine leak detectors	680	100	680
Labor & materials (includes monitoring wells & Stage I vapor recovery			
	<u>78,604</u>	<u>100</u>	<u>78,604</u>
Total	\$112,485	88%	\$ 98,916

- (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 \$21,740 and the bare steel system is \$12,788, the resulting portion of the eligible tank and piping cost allocable to pollution control is 41%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 88%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$112,485 with 88% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3441.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Hawthorne Auto Clinic, Inc.
4307 SE Hawthorne Blvd.
Portland, Oregon 97215

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Portland, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 7 years.

Claimed Facility Cost: \$3395.00
(Costs have been documented)

3. 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 the facility was determined substantially completed on April 18, 1991, and the application for certification was filed on April 30, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$3.30/pound. The applicant estimated an annual coolant recovery rate of 30 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$3395.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3444.

Jerry Coffey:JC
(503) 239-8644
May 15, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

4 B Farms, Inc.
James Butsch, Sec.
15234 Butsch Lane NE
Mt. Angel, Oregon 97362

The applicant owns and operates a grass seed farm operation in Mt. Angel, Oregon.

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Rear's 12' Grass Vac with water system, located at 15234 Butsch Lane NE, Mt. Angel, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: \$50,035
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 1,008 acres of perennial grasses under cultivation. Each year the applicant rotates the perennial stands on approximately 300 acres. Initially, the practice was to open field burn after harvesting the old stand and before planting the new stand. To reduce open field burning, the applicant turned to a six step process: raking the straw into windrows, contracting for custom baling, removing the bales from the field, flail chopping the remaining residue and stubble, loafing off the residue and propane flaming the fields. The applicant found the costs prohibitive.

The Grass Vac allows the applicant to consolidate three of the steps (flail chopping, loafing, and propane flaming) into one operation. The Grass Vac flail chops the residue and stubble, sucks the waste off the field into a loafing box, and eliminates propane flaming by sufficiently cleaning the field of waste, weed seeds, and volunteer seeds. By adding the water injection system to the Grass Vac, the applicant will be able to compost the loaves instead of burning them.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on March 25, 1991, and the application for final certification was found to be complete on May 8, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment is used to recover and convert waste products into a salable or usable commodity.

The equipment promotes the conversion of a waste product (straw) into a usable commodity by providing internal moisture to the loaves facilitating decomposition.

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

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 purchase of the equipment.

There is an increase in operating costs of \$17,500 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$50,035, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3946.

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

JB:bmTC3946
May 8, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Richard L. Allen
1310 SW Hwy. 97
Madras, OR 97741

The applicant owns and operates a gas station/grocery store at 1310 SW Hwy. 97, Madras OR, facility no. 10723.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four fiberglass tanks and piping, spill containment basins, tank monitor, turbine leak detectors, automatic shutoff devices, overflow alarm, monitoring wells, sumps and Stage I and II vapor recovery equipment and piping.

Claimed facility cost \$ 73,547
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on March 29, 1991 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on March 31, 1991.

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 and water. This is accomplished by preventing releases into soil or water. 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 requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff devices, sumps and overflow alarm.
- 3) For leak detection - Tank monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and no contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$73,547) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods were available. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Fiberglass tanks & piping	\$ 19,905	36%(1)	\$ 7,166
Spill & Overfill Prevention:			
Spill containment basins	3,295	100	3,295
Automatic shutoff valves	2,355	100	2,355
Sumps	2,450	100	2,450
Leak Detection:			
Tank monitor (includes overfill alarm)	7,500	90 (2)	6,750
Turbine leak detectors	1,316	100	1,316
Labor & materials (includes monitoring well & vapor recovery)	<u>36,726</u>	<u>100</u>	<u>36,726</u>
Total	\$ 73,547	82%	\$ 60,058

(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 \$19,905 and the bare steel system is \$12,776, the resulting portion of the eligible tank and piping cost allocable to pollution control is 36%.

(2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 82%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$73,547 with 82% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3447.

Barbara J. Anderson:ew
(503) 229-5870
May 7, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Oregon Rootstock and Tree Co., Inc.
dba TRECO
10906 Monitor-McKee Road NE
Woodburn, Oregon 97071

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a New Holland 505 baler, New Holland bale wagon, and Caterpillar hay squeeze, located at 10906 Monitor-McKee Road NE, Woodburn, Oregon. The equipment is owned by the applicant.

New Holland 505 baler	\$35,000
New Holland bale wagon	\$75,000
Caterpillar tractor	\$83,050
Hydraulic system/hay squeeze attachments	\$10,060

Claimed equipment cost: \$208,110
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 311 acres of perennial ryegrass under cultivation. In recent years the applicant registered all perennial acres for open field burning and open field burned as many acres as the weather and smoke management program permitted.

The applicant has opted to propane flame the perennial acreage in lieu of open field burning. Initially, the applicant arranged for the bulk straw to be removed by custom balers. Often the custom balers failed to remove the straw in a timely manner reducing the effectiveness of the propane flaming.

To provide maximum eradication of pests, weeds, and volunteer seeds by propane flaming, the applicant required timely and reliable bulk straw removal. To achieve this objective, the applicant purchased the baler, bale wagon, and hay squeeze.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on May 1, 1991, and the application for final certification was found to be complete on May 8, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment is used to recover and convert waste products into a salable or usable commodity.

The equipment promotes the conversion of a waste product (straw) into a usable commodity by providing a method to remove the bulk straw from the harvested fields.

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

There is no annual percent return on the investment as applicant claims no gross annual income. Applicant has been unable to market the straw but does give it away.

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 purchase of the equipment.

There is an increase in operating costs of \$4,500 to annually maintain and operate the equipment. 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 equipment properly allocable to the prevention, control or reduction of air pollution.

The established average annual operating hours for tractors is set at 450 hours. To obtain a total percent allocable, the annual operating hours per implement used in reducing acreage open field burned is as follows:

Perennial

<u>Implement</u>	<u>Acres Worked</u>	<u>Acres/hour</u>	<u>Annual Operating Hours</u>
Hay Squeeze	622 (311x2)	3	207
Total annual operating hours			207

The total annual operating hours of 207 divided by the average annual operating hours of 450 produces a percent allocable of 46%.

The total percent allocable pursuant to Department procedures is displayed in the following table.

<u>Equipment</u>	<u>Eligible Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
New Holland 505 baler	\$35,000	100%	\$ 35,000
New Holland bale wagon	75,000	100%	75,000
Caterpillar tractor	88,050	46%	40,503
Hydraulic system/hay squeeze	10,060	100%	10,060
Total	208,110	77%	\$160,563

The actual cost of the equipment properly allocable to pollution control as determined by using these factors is 77%.

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 77%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$208,110, with 77% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3448.

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

JB:bmTC3448
May 8, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Atlantic Richfield Company
2000 Alameda de los Pulgas
San Mateo, CA 94402

The applicant owns and operates a service station at 1002 McLoughlin Blvd., Oregon City OR, facility no. 3948.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost (Accountant's certification was provided)	\$112,492
--	-----------

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on March 7, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on March 7, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Interstitial monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$112,492) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the most efficient and cost effective. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Double wall fiberglass tanks & piping	\$ 39,888	39%(1)	\$ 15,556
Leak Detection:			
Interstitial monitor	3,716	100	3,716
Turbine leak detectors	406	100	406
Labor & materials (includes spill containment basins, monitoring wells, automatic shutoff valves & vapor recovery)	<u>68,482</u>	<u>100</u>	<u>68,482</u>
Total	\$112,492	78%	\$ 88,160

- (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 \$39,888 and the bare steel system is \$24,401, the resulting portion of the eligible tank and piping cost allocable to pollution control is 39%.

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 and water. This is accomplished by preventing releases in soil or water. 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 78%.

6. . Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$112,492 with 78% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3449.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Atlantic Richfield Company
2000 Alameda de los Pulgas
San Mateo, CA 94402

The applicant owns and operates a service station at 4669 River Rd., N., Salem OR, facility no. 3964.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost \$ 96,003
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on November 27, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on November 27, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 six steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Interstitial monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$96,003) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the most efficient and cost effective. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection: Double wall fiberglass tanks & piping	\$ 44,528	55%(1)	\$ 24,490
Leak Detection: Interstitial monitor	3,717	100	3,717
Turbine leak detectors	385	100	385
Labor & materials (includes spill containment basins, monitoring wells, automatic shutoff valves & vapor recovery)	<u>47,373</u>	<u>100</u>	<u>47,373</u>
Total	\$ 96,003	79%	\$ 75,965

- (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 \$44,528 and the bare steel system is \$19,821, the resulting portion of the eligible tank and piping cost allocable to pollution control is 55%.

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 and water. This is accomplished by preventing releases in soil or water. 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 \$96,003 with 79% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3450.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Atlantic Richfield Company
2000 Alameda de los Pulgas
San Mateo, CA 94402

The applicant owns and operates a service station at 10975 Beaverton/Hillsdale Hwy., Beaverton OR, facility no. 3917.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost	\$108,708
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on November 6, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on November 6, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Interstitial monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$108,708) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection: Double wall fiberglass tanks & piping	\$ 48,381	53%(1)	\$ 25,642
Leak Detection:			
Interstitial monitor	1,879	100	1,879
Turbine leak detectors	385	100	385
Labor & materials (includes spill containment basins, monitoring wells, automatic shutoff valves & vapor recovery)	<u>58,063</u>	<u>100</u>	<u>58,063</u>
Total	\$108,708	79%	\$ 85,969

(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 \$48,381 and the bare steel system is \$22,664, the resulting portion of the eligible tank and piping cost allocable to pollution control is 53%.

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 and water. This is accomplished by preventing releases in soil or water. 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 \$108,708 with 79% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3451.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Atlantic Richfield Company
2000 Alameda de los Pulgas
San Mateo, CA 94402

The applicant owns and operates a service station at 12140 SE Halsey, Portland OR, facility no. 3954.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost	\$125,147
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on December 31, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on December 31, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Interstitial monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$125,147) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the most efficient and cost effective. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection: Double wall fiberglass tanks & piping	\$ 57,688	60%(1)	\$ 34,613
Leak Detection:			
Interstitial monitor	1,878	100	1,878
Turbine leak detectors	385	100	385
Labor & materials (includes spill containment basins, monitoring wells, automatic shutoff valves & vapor recovery)	<u>65,196</u>	<u>100</u>	<u>65,196</u>
Total	\$125,147	82%	\$102,072

- (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 \$57,688 and the bare steel system is \$22,803, the resulting portion of the eligible tank and piping cost allocable to pollution control is 60%.

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 and water. This is accomplished by preventing releases in soil or water. 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 82%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$125,147 with 82% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3452.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Atlantic Richfield Company
2000 Alameda de los Pulgas
San Mateo, CA 94402

The applicant owns and operates a service station at 7509 NE Martin Luther King Blvd., Portland OR, facility no. 3969.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost	\$130,354
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on December 20, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on December 20, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 eight steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Interstitial monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$130,354) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the most efficient and cost effective. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection: Double wall fiberglass tanks & piping	\$ 41,221	45%(1)	\$ 18,549
Leak Detection: Interstitial monitor	3,743	100	3,743
Turbine leak detectors	385	100	385
Labor & materials (includes spill containment basins, monitoring wells, automatic shutoff valves & vapor recovery)	<u>85,005</u>	<u>100</u>	<u>85,005</u>
Total	\$130,354	83%	\$107,682

- (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 \$41,221 and the bare steel system is \$22,846, the resulting portion of the eligible tank and piping cost allocable to pollution control is 45%.

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 and water. This is accomplished by preventing releases in soil or water. 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 83%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$130,354 with 83% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3453.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Atlantic Richfield Company
2000 Alameda de los Pulgas
San Mateo, CA 94402

The applicant owns and operates a service station at 57 W. Powell, Gresham OR, facility no. 3946.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four double wall fiberglass/steel tanks and fiberglass piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost \$103,848
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on December 31, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on December 31, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall fiberglass/steel tanks and fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Interstitial monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$103,848) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the most efficient and cost effective. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Double wall fiberglass/steel tanks & fiberglass piping	\$ 36,289	37%(1)	\$ 13,427
Leak Detection:			
Interstitial monitor	1,964	100	1,964
Turbine leak detectors	385	100	385
Labor & materials (includes spill containment basins, monitoring wells, automatic shutoff valves & vapor recovery)	<u>65,210</u>	<u>100</u>	<u>65,210</u>
Total	\$103,848	78%	\$ 80,986

(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 \$36,289 and the bare steel system is \$22,823, the resulting portion of the eligible tank and piping cost allocable to pollution control is 37%.

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 and water. This is accomplished by preventing releases in soil or water. 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 78%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$103,848 with 78% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3454.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Atlantic Richfield Company
2000 Alameda de los Pulgas
San Mateo, CA 94402

The applicant owns and operates a service station at 16141 SE Division, Portland OR, facility no. 3985.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of five double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost	\$127,125
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on December 15, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on December 15, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 five steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Interstitial monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$127,125) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Double wall fiberglass tanks & piping	\$ 42,853	43%(1)	\$ 18,427
Leak Detection:			
Interstitial monitor	1,878	100	1,878
Turbine leak detectors	311	100	311
Labor & materials (includes spill containment basins, monitoring wells, automatic shutoff valves & vapor recovery)	<u>82,083</u>	<u>100</u>	<u>82,083</u>
Total	\$127,125	81%	\$102,699

- (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 \$42,853 and the bare steel system is \$24,221, the resulting portion of the eligible tank and piping cost allocable to pollution control is 43%.

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 and water. This is accomplished by preventing releases in soil or water. 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 81%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$127,125 with 81% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3455.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Gresham Chevron
1820 NE Division
Gresham, Oregon 97030

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Gresham, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 3 years.

Claimed Facility Cost: \$3000.00
(Costs have been documented)

3. 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 the facility was determined substantially completed on April 29, 1991, and the application for certification was filed on May 3, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$5.40/pound. The applicant estimated an annual coolant recovery rate of 60 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$3000.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3456.

Jerry Coffey:JC
(503) 239-8644
May 15, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Stein Oil Co., Inc.
19805 McLoughlin
Gladstone, OR 97027

The applicant owns and operates a commercial fueling facility at Hwy. 212 & 102nd Ave., Clackamas OR, facility no. 10010.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the new installation of four STI-P3 tanks and fiberglass piping, spill containment basins, turbine leak detectors, automatic shutoff valves, monitoring wells, sumps, oil/water separator and Stage I and II vapor recovery equipment and piping.

Claimed facility cost \$ 31,333
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on April 18, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on April 23, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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."

This is a new facility. There is no prior condition to report.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - STI-P3 tanks and fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, sumps and automatic shutoff valves.
- 3) For leak detection - Monitoring wells and turbine leak detectors.

The applicant also installed an oil/water separator and Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed prior to the project and no contamination was found.

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.

The Department concludes that the eligible facility cost for the project is \$27,772. This represents a difference of \$3,561 from the applicant's claimed cost of \$31,333 due to a determination by the Department that the cost of turbines is not eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the most appropriate for the site. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
STI-P3 tanks & fiberglass piping	\$ 20,638	35%(1)	\$ 7,223
Spill & Overfill Prevention:			
Spill containment basins	932	100	932
Automatic shutoff valves	200	100	200
Sumps	270	100	270
Leak Detection:			
Monitoring wells	111	100	111
Turbine leak detectors	716	100	716
Oil/water separator	1,959	100	1,959
Labor & materials (includes Stage I & II vapor recovery)	<u>2,946</u>	<u>100</u>	<u>2,946</u>
Total	\$ 27,772	52%	\$ 14,357

(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 \$20,638 and the bare steel system is \$13,462, the resulting portion of the eligible tank and piping cost allocable to pollution control is 35%.

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 and water. This is accomplished by preventing releases in soil or water. 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 52%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$27,772 with 52% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3457.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Stein Oil Co., Inc.
19805 McLoughlin
Gladstone, OR 97027

The applicant owns and operates a service station at 19855 McLoughlin, Gladstone OR, facility no. 1714.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three fiberglass tanks and double wall fiberglass piping, spill containment basins, overflow alarm, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost	\$ 52,789
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on April 11, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in February, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 five steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Three double wall fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins, overflow alarm and automatic shutoff valves.
- 3) For leak detection - Monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and no contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$52,789) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the most appropriate for the site. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Fiberglass tanks & piping	\$ 11,293	35%(1)	\$ 3,953
Spill & Overfill Prevention:			
Spill containment basins	675	100	675
Automatic shutoff valves	1,005	100	1,005
Overfill alarm	196	100	196
Leak Detection:			
Monitoring wells	272	100	272
Stage I & II vapor recovery	885	100	885
Labor & materials	<u>38,463</u>	<u>100</u>	<u>38,463</u>
Total	\$ 52,789	86%	\$ 45,449

(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 \$11,293 and the bare steel system is \$7,320, the resulting portion of the eligible tank and piping cost allocable to pollution control is 35%.

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 and water. This is accomplished by preventing releases in soil or water. 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 86%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$52,789 with 86% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3458.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Stein Oil Co., Inc.
19805 McLoughlin
Gladstone, OR 97027

The applicant owns and operates a service station at 1780 Washington, Oregon City OR, facility no. 7985.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of two fiberglass tanks and double wall fiberglass piping, spill containment basins, turbine leak detectors, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost \$ 37,174
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on August 30, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on August 30, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 three steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Two fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff valves.
- 3) For leak detection - Turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and no contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$37,174) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the most appropriate for the site. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Fiberglass tanks & piping	\$ 9,473	37%(1)	\$ 3,505
Spill & Overfill Prevention:			
Spill containment basins	444	100	444
Automatic shutoff valves	59	100	59
Leak Detection:			
Turbine leak detectors	357	100	357
Monitoring wells	130	100	130
Labor & materials (includes Stage I & II vapor recovery)	<u>26,711</u>	<u>100</u>	<u>26,711</u>
Total	\$ 37,174	84%	\$ 31,206

(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 \$9,473 and the bare steel system is \$5,941, the resulting portion of the eligible tank and piping cost allocable to pollution control is 37%.

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 and water. This is accomplished by preventing releases in soil or water. 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 84%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$37,174 with 84% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3459.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Merritt #1, Inc.
205 Columbia St., NE
Salem, OR 97303

The applicant owns and operates a service station at 3510 River Rd., N, Keizer OR, facility no. 3619.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three double wall fiberglass/steel composite tanks, double wall fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, automatic shutoff valves, overflow alarm, monitoring wells, sumps and Stage I and II vapor recovery equipment and piping.

Claimed facility cost \$ 57,590
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed in December, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in November, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 three steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment except for line leak detectors.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall fiberglass/steel composite tanks and double wall fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff valves, sumps and overflow alarm.
- 3) For leak detection - Tank monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that the eligible facility cost for the project is \$75,614. This represents a difference of \$18,024 from the applicant's claimed cost of \$57,590 due to a determination by the Department that the cost of the project should reflect the total cost of tanks and piping.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Double wall steel/fiberglass tanks & fiberglass pipe	\$37,024	51%(1)	\$18,882
Spill & Overfill Prevention:			
Spill containment basins	507	100	507
Automatic shutoff valves	3,240	100	3,240
Sumps	1,149	100	1,149
Overfill alarm	84	100	84
Leak Detection:			
Tank monitor	4,995	90 (2)	4,496
Turbine leak detectors	474	100	474
Monitoring wells	300	100	300
Stage I & II vapor recovery	2,465	100	2,465
Labor & materials	<u>25,376</u>	<u>100</u>	<u>25,376</u>
Total	\$75,614	75%	\$56,973

(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 \$37,024 and the bare steel system is \$18,024, the resulting portion of the eligible tank and piping cost allocable to pollution control is 51%.

(2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 75%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$75,614 with 75% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3460.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Merritt #2, Inc.
205 Columbia St., NE
Salem, OR 97303

The applicant owns and operates a service station at 4005 Silverton Rd., NE, Salem OR, facility no. 4658.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three double wall fiberglass/steel tanks and double wall fiberglass piping, spill containment basins, tank monitor, line leak detectors, automatic shutoff valves, overflow alarm, monitoring wells, sumps, oil/water separator and Stage I and II vapor recovery equipment and piping.

Claimed facility cost \$ 81,366
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on May 1, 1991 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in May, 1991.

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 and water. This is accomplished by preventing releases into soil or water. 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 five steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall fiberglass/steel tanks and double wall fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff valves, sumps and overflow alarm.
- 3) For leak detection - Tank monitor, line leak detectors and monitoring wells.

The applicant also installed an oil/water separator and Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that the eligible facility cost for the project is \$102,020. This represents a difference of \$20,654 from the applicant's claimed cost of \$81,366 due to a determination by the Department that the cost of the project should reflect the total cost of tanks and piping.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Double wall fiberglass/steel tanks & fiberglass piping	\$ 39,524	48%(1)	\$ 18,972
Spill & Overfill Prevention:			
Spill containment basins	1,600	100	1,600
Automatic shutoff valves	2,862	100	2,862
Sumps	1,845	100	1,845
Overfill alarm	84	100	84
Leak Detection:			
Tank monitor	5,407	90 (2)	4,866
Line leak detectors	816	100	816
Monitoring wells	456	100	456
Oil/water separator	1,450	100	1,450
Stage I & II vapor recovery	2,159	100	2,159
Labor & materials	<u>45,817</u>	<u>100</u>	<u>45,817</u>
Total	\$102,020	79%	\$ 80,927

- (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 \$39,524 and the bare steel system is \$20,655, the resulting portion of the eligible tank and piping cost allocable to pollution control is 48%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 \$102,020 with 79% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3461.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Merritt #2, Inc.
205 Columbia St., NE
Salem, OR 97303

The applicant owns and operates a service station at 1395 Hwy. 99N, Eugene OR, facility no. 6444.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three double wall composite tanks and double wall fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, automatic shutoff valves, overflow alarm, monitoring wells, sumps and Stage I and II vapor recovery equipment and piping.

Claimed facility cost \$ 91,171
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed in December, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in February, 1991.

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 and water. This is accomplished by preventing releases into soil or water. 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 three steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment except for line leak detectors.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall composite tanks and double wall fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff valves, sumps and overflow alarm.
- 3) For leak detection - Tank monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that the eligible facility cost for the project is \$109,222. This represents a difference of \$18,051 from the applicant's claimed cost of \$91,171 due to a determination by the Department that the cost of the project should reflect the total cost of tanks and piping.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Double wall composite tanks & fiberglass piping	\$ 37,167	51%(1)	\$ 18,955
Spill & Overfill Prevention:			
Spill containment basins	507	100	507
Automatic shutoff valves	2,580	100	2,580
Sumps	1,149	100	1,149
Overfill alarm	63	100	63
Leak Detection:			
Tank monitor	4,995	90 (2)	4,496
Turbine leak detectors	474	100	474
Monitoring wells	912	100	912
Stage I & II vapor recovery	2,465	100	2,465
Labor & materials	<u>58,910</u>	<u>100</u>	<u>58,910</u>
Total	\$109,222	83%	\$ 90,511

(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 \$37,167 and the bare steel system is \$18,051, the resulting portion of the eligible tank and piping cost allocable to pollution control is 51%.

(2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 83%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$109,222 with 83% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3462.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Merritt Truax, Inc.
205 Columbia St., NE
Salem, OR 97303

The applicant leases and operates a service station at 32959 Van Duyn Rd., Eugene OR, facility no. 9208.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three double wall composite tanks and fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, automatic shutoff valves, overflow alarm, monitoring wells, sumps and Stage I and II vapor recovery equipment and piping.

Claimed facility cost \$ 83,834
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on December 31, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on December 31, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 three steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall composite tanks and fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff valves, sumps and overflow alarm.
- 3) For leak detection - Tank monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that the eligible facility cost for the project is \$101,487. This represents a difference of \$17,653 from the applicant's claimed cost of \$83,834 due to a determination by the Department that the cost of the project should reflect the total cost of tanks and piping.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Double wall composite tanks & fiberglass piping	\$ 34,366	49%(1)	\$ 16,839
Spill & Overfill Prevention:			
Spill containment basins	588	100	588
Automatic shutoff valves	350	100	350
Sumps	1,845	100	1,845
Overfill alarm	84	100	84
Leak Detection:			
Tank monitor	8,542	90 (2)	7,688
Turbine leak detectors	816	100	816
Monitoring wells	456	100	456
Stage I & II vapor recovery	2,429	100	2,429
Labor & materials	<u>52,011</u>	<u>100</u>	<u>52,011</u>
Total	\$101,487	82%	\$ 83,106

- (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 \$34,366 and the bare steel system is \$17,653, the resulting portion of the eligible tank and piping cost allocable to pollution control is 49%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 82%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$101,487 with 82% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3463.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Merritt Truax, Inc.
205 Columbia St., NE
Salem, OR 97303

The applicant leases and operates a service station at 25715 Hwys. 18 & 22, Willamina OR, facility no. 5663.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four double wall composite tanks and fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, automatic shutoff valves, overflow alarm, monitoring wells, sumps, oil/water separator and Stage I and II vapor recovery equipment and piping.

Claimed facility cost	\$120,861
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed in May, 1991 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in April, 1991.

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 and water. This is accomplished by preventing releases into soil or water. 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 requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall composite tanks and fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff valves, sumps and overflow alarm.
- 3) For leak detection - Tank monitor, turbine leak detectors and monitoring wells.

The applicant also installed an oil/water separator and Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that the eligible facility cost for the project is \$143,431. This represents a difference of \$22,570 from the applicant's claimed cost of \$120,861 due to a determination by the Department that the cost of the project should reflect the total cost of tanks and piping.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Double wall composite tanks & fiberglass piping	\$ 44,068	49%(1)	\$ 21,593
Spill & Overflow Prevention:			
Spill containment basins	186	100	186
Automatic shutoff valves	378	100	378
Sumps	2,460	100	2,460
Overflow alarm	84	100	84
Leak Detection:			
Tank monitor	5,978	90 (2)	5,380
Turbine leak detectors	680	100	680
Monitoring wells	300	100	300
Oil/water separator	1,863	100	1,863
Stage I & II vapor recovery	2,411	100	2,411
Labor & materials	<u>85,023</u>	<u>100</u>	<u>85,023</u>
Total	\$143,431	84%	\$120,358

- (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 \$44,068 and the bare steel system is \$22,570, the resulting portion of the eligible tank and piping cost allocable to pollution control is 49%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 84%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$143,431 with 84% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3464.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Merritt Truax, Inc.
205 Columbia St., NE
Salem, OR 97303

The applicant owns and operates a cardlock/retail service station at 35310 Hwy. 58, Springfield OR, facility no. 6437.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four double wall composite tanks and fiberglass piping, spill containment basins, interstitial monitor, turbine leak detectors, automatic shutoff valves, overfill alarm, monitoring wells, sumps, oil/water separator and Stage I and II vapor recovery equipment and piping.

Claimed facility cost	\$209,747
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on December 31, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on December 31, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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. (There are also three aboveground tanks at the site.)

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall composite tanks and fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff valves, sumps and overflow alarm.
- 3) For leak detection - Tank monitor, turbine leak detectors and monitoring wells.

The applicant also installed an oil/water separator and Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that the eligible facility cost for the project is \$234,590. This represents a difference of \$24,843 from the applicant's claimed cost of \$209,747 due to a determination by the Department that the cost of the project should reflect the total cost of tanks and piping.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Double wall composite tanks & fiberglass piping	\$ 51,683	52%(1)	\$ 26,875
Spill & Overfill Prevention:			
Spill containment basins	655	100	655
Automatic shutoff valves	1,008	100	1,008
Sumps	2,528	100	2,528
Overfill alarm	84	100	84
Leak Detection:			
Interstitial monitors	1,356	100	1,356
Turbine leak detectors	680	100	680
Monitoring wells	456	100	456
Oil/water separator	3,850	100	3,850
Stage I & II vapor recovery	2,596	100	2,596
Labor & materials	<u>169,694</u>	<u>100</u>	<u>169,694</u>
Total	\$234,590	89%	\$209,782

(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 \$51,683 and the bare steel system is \$24,843, the resulting portion of the eligible tank and piping cost allocable to pollution control is 52%.

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 and water. This is accomplished by preventing releases in soil or water. 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 89%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$234,590 with 89% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3465.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Truax Oil
PO Box 2099
Salem, OR 97308

The applicant owns and operates a cardlock facility at 7832 Squirrel Hill Rd., Salem OR, facility no. 3606.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of a tank monitor and an overfill alarm.

Claimed facility cost	\$ 12,753
(Documentation of cost was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed in June, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in June, 1990..

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 and water. This is accomplished by preventing releases into soil or water. 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 five steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment except for line leak detectors.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For spill and overflow prevention - An overflow alarm.
- 2) For leak detection - Tank monitor.

The applicant reported that the soil was inspected during construction of the project and no evidence of contamination was found.

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.

The Department concludes that the eligible facility cost for the project is \$12,726. This represents a difference of \$27 from the applicant's claimed cost of \$12,753 due to a determination by the Department that the cost of the overflow alarm was claimed at the list price rather than the discounted price received by the applicant.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Spill & Overfill Prevention:			
Overfill alarm	\$ 83	100%	\$ 83
Leak Detection:			
Tank monitor	5,908	90 (1)	5,317
Labor & materials	<u>6,735</u>	<u>100</u>	<u>6,735</u>
Total	\$ 12,726	95%	\$ 12,135

- (1) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 95%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$12,726 with 95% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3466.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Pacific Petroleum Corp.
PO Box 2803
Eugene, OR 97402

The applicant owns and operates a service station at 3650 Glenwood Drive, Eugene OR, facility no. 3322.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four STI-P3 tanks with anodes, fiberglass piping, spill containment basins, tank monitor, line leak detectors, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost	\$219,883
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed in August, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in August, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 except turbine leak detectors.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - STI-P3 tanks with anodes and fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Tank monitor, monitoring wells and line leak detectors.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$219,883) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
STI-P3 tanks & fiberglass piping	\$ 23,099	37% (1)	\$ 8,547
Anodes	2,148	100	2,148
Spill & Overfill Prevention:			
Spill containment basins	1,689	100	1,689
Automatic shutoff valves	2,137	100	2,137
Leak Detection:			
Tank monitor	5,026	90 (2)	4,523
Line leak detectors	500	100	500
Labor & materials (includes monitoring wells & Stage I & II vapor recovery)			
	<u>185,284</u>	<u>100 (3)</u>	<u>185,284</u>
Total	\$219,883	93%	\$204,828

- (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 \$23,099 and the bare steel system is \$14,487, the resulting portion of the eligible tank and piping cost allocable to pollution control is 37%.
- (2) The applicant's cost for a tank monitor 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.
- (3) Labor costs were high for this project due to solid rock which required extra excavation.

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 and water. This is accomplished by preventing releases in soil or water. 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 93%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$219,883 with 93% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3467.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Pacific Petroleum Corp.
PO Box 2803
Eugene, OR 97402

The applicant owns and operates a service station/convenience store at 3520 Gateway, Springfield OR, facility no. 3158.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four STI-P3 tanks with anodes, fiberglass piping, spill containment basins, tank monitor, line leak detectors, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost	\$143,724
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed in July, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in July, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - STI-P3 tanks with anodes and fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Tank monitor and line leak detectors.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and no contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$143,724) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
STI-P3 tanks & fiberglass piping	\$ 24,549	37% (1)	\$ 9,083
Anodes	586	100	586
Spill & Overfill Prevention:			
Spill containment basins	782	100	782
Automatic shutoff valves	2,397	100	2,397
Leak Detection:			
Tank monitor	5,026	90 (2)	4,523
Line leak detectors	588	100	588
Labor & materials (includes monitoring wells & Stage I & II vapor recovery)	<u>109,796</u>	<u>100</u>	<u>109,796</u>
Total	\$143,724	89%	\$127,755

- (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 \$24,549 and the bare steel system is \$15,537, the resulting portion of the eligible tank and piping cost allocable to pollution control is 37%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 89%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$143,724 with 89% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3468.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Pacific Petroleum Corp.
PO Box 2803
Eugene, OR 97402

The applicant owns and operates a retail truck stop at I5 and Bear Creek Rd., Curtin OR, facility no. 5220.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of fiberglass piping, spill containment basins, turbine leak detectors and automatic shutoff valves.

Claimed facility cost	\$ 8,570
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed in January, 1991 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in January, 1991.

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 and water. This is accomplished by preventing releases into soil or water. 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 five steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Fiberglass piping on two diesel tank systems.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves on two tank systems.
- 3) For leak detection - Turbine leak detectors on piping systems for two tanks.

The applicant reported that the soil was inspected during construction of the project and no evidence of contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$8,570) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Fiberglass piping	\$ 582	50%(1)	\$ 291
Spill & Overflow Prevention:			
Spill containment basins	396	100	396
Automatic shutoff valves	826	100	826
Leak Detection:			
Turbine leak detectors	370	100	370
Labor & materials	<u>6,396</u>	<u>100</u>	<u>6,396</u>
Total	\$ 8,570	97%	\$ 8,279

(1) The Department has determined the percent allocable on the cost of a corrosion protected piping system by using a formula based on the difference in cost between the protected system and an equivalent steel system as a percent of the protected system. Applying this formula to the costs presented by the applicant, where the protected piping system cost is \$582 and the steel system is \$292, the resulting portion of the eligible piping cost allocable to pollution control is 50%.

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 and water. This is accomplished by preventing releases in soil or water. 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 97%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$8,570 with 97% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3469.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Metro Metric Automotive Service
715 SE 10th
Portland, Oregon 97214

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Portland, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 5 years.

Claimed Facility Cost: \$2399.00
(Costs have been documented)

3. 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 the facility was determined substantially completed on April 20, 1991, and the application for certification was filed on May 7, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$4.60/pound. The applicant estimated an annual coolant recovery rate of 5 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$2399.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3476.

Jerry Coffey:JC
(503) 239-8644
May 15, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Atlantic Richfield Company
2000 Alameda de los Pulgas
San Mateo, CA 94402

The applicant owns and operates a service station at 5710 NE Fremont, Portland OR, facility no. 3931.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost	\$102,016
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed in October 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on October 13, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 nine steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Interstitial monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$102,016) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the most efficient and cost effective. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection: Double wall fiberglass tanks & piping	\$ 41,137	51%(1)	\$ 20,980
Leak Detection:			
Interstitial monitor	1,878	100	1,878
Turbine leak detectors	385	100	385
Labor & materials (includes spill containment basins, monitoring wells, automatic shutoff valves & vapor recovery)	<u>58,616</u>	<u>100</u>	<u>58,616</u>
Total	\$102,016	80%	\$ 81,859

- (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 \$41,137 and the bare steel system is \$20,021, the resulting portion of the eligible tank and piping cost allocable to pollution control is 51%.

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 and water. This is accomplished by preventing releases in soil or water. 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 80%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$102,016 with 80% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3477.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Atlantic Richfield Company
2000 Alameda de los Pulgas
San Mateo, CA 94402

The applicant owns and operates a service station at 2720 Newburg Hwy., Woodburn OR, facility no. 3962.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost (Accountant's certification was provided)	\$141,936
--	-----------

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on February 9, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on February 9, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 six steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Interstitial monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$141,936) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Double wall fiberglass tanks & piping	\$ 41,232	44%(1)	\$ 18,142
Leak Detection:			
Interstitial monitor	2,390	100	2,390
Turbine leak detectors	406	100	406
Labor & materials (includes spill containment basins, monitoring wells, automatic shutoff valves & vapor recovery)	<u>97,908</u>	<u>100</u>	<u>97,908</u>
Total	\$141,936	84%	\$118,846

- (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 \$41,232 and the bare steel system is \$22,918, the resulting portion of the eligible tank and piping cost allocable to pollution control is 44%.

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 and water. This is accomplished by preventing releases in soil or water. 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 84%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$141,936 with 84% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3478.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Atlantic Richfield Company
2000 Alameda de los Pulgas
San Mateo, CA 94402

The applicant owns and operates a service station at 3840 SE Belmont, Portland OR, facility no. 3975.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of five double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost	\$143,514
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on September 13, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on September 13, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 seven steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Interstitial monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$143,514) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the most efficient and cost effective. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection: Double wall fiberglass tanks & piping	\$ 51,906	54%(1)	\$ 28,029
Leak Detection: Interstitial monitor	3,719	100	3,719
Turbine leak detectors	385	100	385
Labor & materials (includes spill containment basins, monitoring wells, automatic shutoff valves & vapor recovery)	<u>87,504</u>	<u>100</u>	<u>87,504</u>
Total	\$143,514	83%	\$119,637

(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 \$51,906 and the bare steel system is \$23,958, the resulting portion of the eligible tank and piping cost allocable to pollution control is 54%.

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 and water. This is accomplished by preventing releases in soil or water. 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 83%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$143,514 with 83% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3479.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Atlantic Richfield Company
2000 Alameda de los Pulgas
San Mateo, CA 94402

The applicant owns and operates a service station at 15300 SW Royalty Parkway, Tigard OR, facility no. 3972.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four double wall fiberglass tanks and piping, interstitial monitoring, turbine leak detectors, spill containment basins, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost (Accountant's certification was provided)	\$157,274
--	-----------

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on November 7, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on November 7, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 six steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Interstitial monitor, turbine leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$157,274) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the most efficient and cost effective. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Double wall fiberglass tanks & piping	\$ 52,613	57%(1)	\$ 29,989
Leak Detection:			
Interstitial monitor	3,744	100	3,744
Turbine leak detectors	385	100	385
Labor & materials (includes spill containment basins, monitoring wells, automatic shutoff valves & vapor recovery)	<u>100,532</u>	<u>100</u>	<u>100,532</u>
Total	\$157,274	86%	\$134,650

(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 \$52,613 and the bare steel system is \$22,795, the resulting portion of the eligible tank and piping cost allocable to pollution control is 57%.

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 and water. This is accomplished by preventing releases in soil or water. 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 86%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$157,274 with 86% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3480.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Heller & Sons Distributing, Inc.
PO Box 66
Hermiston, OR 97838

The applicant owns and operates a service station and cardlock at 615 N. 1st, Hermiston OR, facility no. 6486.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of one STI-P3 tank and cathodic protection on three steel tanks and steel piping for four tanks, spill containment basins, tank monitor system, turbine leak detectors, automatic shutoff valves and monitoring wells.

Claimed facility cost \$ 43,500
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on August 21, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation August 21, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 three asphalt coated steel tanks and steel piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - One STI-P3 tank and cathodic protection on three tanks and all piping.
- 2) For spill and overflow prevention - Spill containment basins and automatic shutoff valves.
- 3) For leak detection - Tank monitor, turbine leak detectors and monitoring wells.

The applicant reported that the soil was inspected during construction of the project and no evidence of contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$43,500) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
STI-P3 tank	\$ 2,604	35% (1)	\$ 911
Cathodic protection	945	100	945
Spill & Overfill Prevention:			
Spill containment basins	772	100	772
Automatic shutoff valves	532	100	532
Leak Detection:			
Tank monitor	6,035	90 (2)	5,432
Turbine leak detectors	740	100	740
Labor & materials (includes monitoring wells)	<u>31,872</u>	<u>100</u>	<u>31,872</u>
Total	\$43,500	95%	\$41,204

- (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 \$2,604 and the bare steel system is \$1,692, the resulting portion of the eligible tank and piping cost allocable to pollution control is 35%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 95%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$43,500 with 95% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3481.

Barbara J. Anderson:ew
(503) 229-5870
May 9, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Stein Oil Co., Inc.
19805 McLoughlin
Gladstone, OR 97027

The applicant owns and operates a service station at 10560 Hwy. 212, Clackamas OR, facility no. 7972.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of four STI-P3 tanks and double wall fiberglass piping, spill containment basins, turbine leak detectors, automatic shutoff valves, monitoring wells and Stage I and II vapor recovery equipment and piping.

Claimed facility cost \$ 75,819
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on June 15, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on June 15, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - STI-P3 tanks and double wall fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff valves.
- 3) For leak detection - Turbine leak detectors and monitoring wells.

The applicant also installed Stage I vapor recovery equipment.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that the eligible facility cost for the project is (\$75,619). This represents a difference of \$200 from the applicant's claimed cost of \$75,819 due to a determination by the Department that the cost of the Petroliner tester is not eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 considered the method chosen to be the most appropriate for the site. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	Eligible Facility Cost	Percent Allocable	Amount Allocable
Corrosion Protection:			
STI- P3 tanks & fiberglass piping	\$ 19,185	36%(1)	\$ 6,907
Spill & Overfill Prevention:			
Spill containment basins	932	100	932
Automatic shutoff valves	580	100	580
Leak Detection:			
Turbine leak detectors	179	100	179
Monitoring wells	304	100	304
Labor & materials (includes Stage I & II vapor recovery)	<u>54,439</u>	<u>100</u>	<u>54,439</u>
Total	\$ 75,619	84%	\$ 63,341

(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 \$19,185 and the bare steel system is \$12,223, the resulting portion of the eligible tank and piping cost allocable to pollution control is 36%.

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 and water. This is accomplished by preventing releases in soil or water. 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 84%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$75,619 with 84% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3482.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Old Town Chevron
400 W. Burnside
Portland, Oregon 97209

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Portland, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 3 years.

Claimed Facility Cost: \$3000.00
(Costs have been documented)

3. 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 the facility was determined substantially completed on February 17, 1991, and the application for certification was filed on May 7, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$5.50/pound. The applicant estimated an annual coolant recovery rate of 90 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$3000.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3483.

Jerry Coffey:JC
(503) 239-8644
May 15, 1991

State of Oregon
Department of Environmental Quality
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

MuMullin Chevrolet, Pontiac, Oldsmobile, Inc.
812 SE Jefferson Street
Dallas, Oregon 97338

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Dallas, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 5 years.

Claimed Facility Cost: \$2180.00
(Costs have been documented)

3. 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 the facility was determined substantially completed on April 11, 1991, and the application for certification was filed on May 7, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$5.12/pound. The applicant estimated an annual coolant recovery rate of 30 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$2180.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3484.

Jerry Coffey:JC
(503) 239-8644
May 15, 1991

State of Oregon
Department of Environmental Quality
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Merritt #1, Inc.
205 Columbia St., NE
Salem, OR 97303

The applicant owns and operates a retail service station at 5195 River Rd., N, Keizer OR, facility no. 3623.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three double wall composite tanks and fiberglass piping, spill containment basins, tank monitor, turbine leak detectors, automatic shutoff valves, overflow alarm, monitoring wells, sumps, oil/water separator and Stage I and II vapor recovery equipment and piping.

Claimed facility cost \$ 80,975
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on September 2, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on September 2, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 a vacant lot. Previous tanks were removed in 1983.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Double wall composite tanks and fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff valves, sumps and overflow alarm.
- 3) For leak detection - Tank monitor, turbine leak detectors and monitoring wells.

The applicant also installed an oil/water separator and Stage I and II vapor recovery equipment and 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.

The Department concludes that the eligible facility cost for the project is \$98,356. This represents a difference of \$17,381 from the applicant's claimed cost of \$80,975 due to a determination by the Department that the cost of the project should reflect the total cost of tanks and piping.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Double wall composite tanks & fiberglass piping	\$34,985	50%(1)	\$17,493
Spill & Overfill Prevention:			
Spill containment basins	549	100	549
Automatic shutoff valves	2,650	100	2,650
Sumps	2,535	100	2,535
Overfill alarm	84	100	84
Leak Detection:			
Tank monitor	5,164	90 (2)	4,648
Turbine leak detectors	510	100	510
Monitoring wells	456	100	456
Oil/water separator	1,788	100	1,788
Stage I & II vapor recovery	3,776	100	3,776
Labor & materials	<u>45,859</u>	<u>100</u>	<u>45,859</u>
Total	\$98,356	82%	\$80,348

- (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 \$34,985 and the bare steel system is \$17,381, the resulting portion of the eligible tank and piping cost allocable to pollution control is 50%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 82%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$98,356 with 82% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3486.

Barbara J. Anderson:ew
(503) 229-5870
May 6, 1991

State of Oregon
Department of Environmental Quality
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Apple City Auto Body Shop
3250 Bonneville Drive
Hood River, Oregon 97031

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Hood River, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 15 years.

Claimed Facility Cost: \$2995.00
(Costs have been documented)

3. 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 the facility was determined substantially completed on March 12, 1991, and the application for certification was filed on May 8, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$8.00/pound. The applicant estimated an annual coolant recovery rate of 120 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$2995.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3487.

Jerry Coffey:JC
(503) 239-8644
May 15, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Roselawn Seed, Inc.
Bill L. Rose, President
PO Box 250
Hubbard, OR 97032

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

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

2. Description of Claimed Facility

The facility described in this application is a 234' x 72' x 22' pole construction straw storage shed, a mobile field sanitizer, and a Freeman baler, located at 7566 S. Schneider Road, Canby, Oregon. The land, buildings and equipment are owned by the applicant.

Straw storage shed	\$ 85,000
Mobile field sanitizer	50,000
Freeman baler	80,000

Claimed facility cost: \$215,000
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 1,200 perennial acres under grass seed cultivation. Previous to constructing the storage shed and purchasing the equipment the applicant states that his fields were open field burned or baled off to be stack burned and then propaned.

The applicant states that "(w)ith the opportunity of putting up a shed we now can get the straw removed at a substantial savings because the haymen [contract balers] have a place to store dry hay, so straw can be preserved for later use or sale." The storage shed and baler eliminate open field burning and stack burning on approximately 1000 acres.

The mobile field sanitizer flame treats the fields in an almost smokeless operation and replaces a propane flamer on approximately 200 acres.

4. Procedural Requirements

The facility and equipment are 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 and purchase of the equipment was substantially completed on July 1, 1990, and the application for final certification was found to be complete on May 14, 1991. The application was submitted within two years of substantial completion of the facility and purchase of the equipment.

5. Evaluation of Application

- a. The facility and equipment are eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 and baler promote the conversion of a waste product (straw) into a salable commodity by providing packaging and protection from the weather.

The mobile field sanitizer does not recover or convert waste products into a salable or usable commodity. The sanitizer enables the applicant to flame treat his fields in an almost smokeless operation.

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

There is no annual percent return on the investment due to the negative average annual cash flow. The shed and equipment generate \$60,000 annually in straw sales but require \$72,000 in annual operating expenses.

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 \$72,000 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 and equipment 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 for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- 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. Reviewer's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$215,000, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-3489.

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

JB:bmtc3489
May 13, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Dean R. Schrock
Kathleen A. Schrock
32397 Hwy. 34
Tangent, OR 97389

The applicant owns and operates a grass seed farm operation in Tangent, 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 150' x 106' x 22' pole construction straw storage shed, located at 32397 Hwy. 34, Tangent, Oregon. The land and buildings are owned by the applicant.

Claimed facility cost: \$79,000
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 900 perennial and 900 annual acres in grass seed production. Prior to investigating alternatives to open field burning, the applicant open field burned as many acres as the weather and smoke management program permitted.

The applicant states that he is now moving toward a program of alternative field treatments that require the straw to be baled off the fields. The storage shed protects approximately 1,600 tons of straw eliminating 600 acres from open field 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 August 15, 1989, and the application for final certification was found to be complete on May 13, 1991. The application was submitted within two years of substantial completion of the facility.

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Sherrill A. Funrue
2557 Driftcreek Road NE
Silverton, OR 97381

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a side delivery wheel rake, heavy duty buckrake, and Hesston 30 stackhand, located at 2557 Driftcreek Road NE, Silverton, Oregon. The equipment is owned by the applicant.

Side delivery wheel rake	\$1,000
Heavy duty buckrake	1,850
Hesston 30 stackhand	3,750

Claimed equipment cost: \$6,600
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 200 perennial and 50 annual acres of grass seed under cultivation. Over the last several years the applicant has gradually reduced the number of acres he has open field burned. He has achieved the reduction by clearing the fields of bulk straw with his side delivery rake, piling the straw with his buckrake, burning the piles fieldside, and propaning the cleared fields. This operation has reduced open field burning by 125 acres.

With the addition of the Hesston stackhand, the applicant states that he will be able to reduce open field burning by an additional 50 acres without resorting to propane flaming.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on April 1, 1991, and the application for final certification was found to be complete on May 15, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment 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. The equipment enables the applicant to remove the straw from the field to be stack burned, avoiding open field burning.

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

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 purchase of the equipment.

There is an increase in operating costs of \$900 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$6,600, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3491.

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

JB:bmTC3491
May 15, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Roger Eder
9286 Waconda Road NE
Brooks, Oregon 97305

The applicant owns and operates a grass seed farm operation in Brooks, 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 108' x 60' x 22' pole construction straw storage shed located at 9286 Waconda Road NE, Brooks, Oregon. The land and buildings are owned by the applicant.

Claimed facility cost: \$26,620
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 350 acres of perennial grasses under cultivation. Over the last several years the applicant has turned from open field burning to baling off the fields, stack burning the bales and propane flaming the fields.

Construction of the straw storage shed has enabled the applicant to contract for reliable removal of the straw by a contract baler who markets the straw to Japan. The applicant has been stack burning the round bales he removed from the fields; stack burning has been eliminated by virtue of the contract with the custom baler. The applicant no longer open field burns any of his acreage.

4. Procedural Requirements

The facility is governed by ORS 438.150 through 438.190, and by CAR Chapter 340, Division 16. The facility has met all statutory deadlines in that:

Construction of the facility was substantially completed on April 1, 1991, and the application for final certification was found to be complete on May 14, 1991. The application was submitted within two years of substantial completion of the facility.

5. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 the weather.

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

The actual cost of the claimed facility (\$26,620) divided by the average annual cash flow (\$2,181) equals a return on investment factor of 12.21. Using Table 1 of OAR 340-16-030 for a life of 10 years, the annual percent return on investment is 0%. Using the annual percent return and the reference annual percent return of 18.3%, 100% is allocable to pollution control.

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 \$3,069 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 for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- 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. Reviewer's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$26,620, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-3492.

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

JB:bmtc3492
May 15, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Robert Guthmiller
Guthmiller's Exxon
1765 Siskiyou Blvd.
Ashland, OR 97520

The applicant owns and operates a service station at 1765 Siskiyou Blvd., Ashland OR, facility no. 2435.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three fiberglass tanks and piping, spill containment basins, line leak detectors, tank monitor, automatic shutoff valves, monitoring wells, overflow alarm and Stage I and II vapor recovery equipment and piping.

Claimed facility cost \$ 58,500
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on October 28, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation on October 28, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 five steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff valves and overflow alarm.
- 3) For leak detection - Tank monitor, line leak detectors and monitoring wells.

The applicant also installed Stage I and II vapor recovery equipment and piping.

The applicant reported that soil testing was performed at the time of tank removal and some contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$58,500) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 indicated that no alternative methods 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Fiberglass tanks & piping	\$17,676	38%(1)	\$ 6,717
Spill & Overfill Prevention:			
Spill containment basins	840	100	840
Overfill alarm	175	100	175
Leak Detection:			
Tank monitor	5,400	90 (2)	4,860
Line leak detectors	537	100	537
Stage I & II vapor recovery	2,400	100	2,400
Labor & materials (includes automatic shutoff valves & monitoring wells)	<u>31,472</u>	<u>100</u>	<u>31,472</u>
Total	\$58,500	80%	\$47,001

- (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 \$17,676 and the bare steel system is \$10,967, the resulting portion of the eligible tank and piping cost allocable to pollution control is 38%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 80%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$58,500 with 80% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3493.

Barbara J. Anderson:ew
(503) 229-5870
May 9, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Sheldon Oil Company
PO Box 776
Tillamook, OR 97141

The applicant owns and operates a convenience store and service station at 36453 Hwy. 101 North, Nehalem OR, facility no. 1511.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of three fiberglass tanks and piping, spill containment basins, tank monitor with overflow alarm, monitoring wells and automatic shutoff valves.

Claimed facility cost \$ 49,426
(Accountant's certification was provided)

Percent allocable to pollution control 100%

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed on December 30, 1990 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in November, 1990.

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 and water. This is accomplished by preventing releases into soil or water. 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 three steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - Fiberglass tanks and piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff valves and overflow alarm.
- 3) For leak detection - Tank monitor and monitoring wells.

The applicant reported that soil testing was performed during construction of the project and no evidence of contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$49,426) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 also considered closing the business. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
Fiberglass tanks & piping	\$11,426	24%(1)	\$ 2,742
Spill & Overfill Prevention:			
Spill containment basins	783	100	783
Leak Detection:			
Tank monitor w/overfill alarm	6,766	90 (2)	6,089
Monitoring wells	254	100	254
Labor & materials (includes automatic shutoff valves)	<u>30,197</u>	<u>100</u>	<u>30,197</u>
Total	\$49,426	81%	\$40,065

- (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 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 tank system is \$11,426 and the bare steel system is \$8,673, the resulting portion of the eligible tank and piping cost allocable to pollution control is 24%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 81%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$49,426 with 81% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3494.

Barbara J. Anderson:ew
(503) 229-5870
May 9, 1991

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Sheldon Oil Company
PO Box 776
Tillamook, OR 97141

The applicant owns and operates a service station at 24485 Hwy. 101 South, Beaver OR, facility no. 1506.

Application was made for a tax credit for a water pollution control facility involving underground storage tanks.

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are the installation of one three compartment STI-P3 tank, fiberglass piping, spill containment basins, tank monitor with overflow alarm, automatic shutoff valves and monitoring wells.

Claimed facility cost	\$ 26,187
(Accountant's certification was provided)	

Percent allocable to pollution control	100%
--	------

3. Procedural Requirements

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

The facility met all statutory deadlines in that installation of the facility was substantially completed in December, 1989 and the application for certification was found to be complete within two years of substantial completion of the facility. The facility was placed into operation in December, 1989.

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 and water. This is accomplished by preventing releases into soil or water. 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 three steel tanks and piping with no corrosion protection and no spill and overflow prevention or leak detection equipment.

To respond to requirements established 12-22-88, the applicant installed:

- 1) For corrosion protection - STI-P3 tank and fiberglass piping.
- 2) For spill and overflow prevention - Spill containment basins, automatic shutoff valves and overflow alarm.
- 3) For leak detection - Tank monitor and monitoring wells.

The applicant reported that soil testing was performed at the time of tank removal and no contamination was found.

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.

The Department concludes that all of the costs claimed by the applicant (\$26,187) are eligible pursuant to the definition of a pollution control facility in ORS 468.155.

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 also considered closing the business. 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.

The Department determined the percent allocable pursuant to Department procedures under Oregon Administrative Rules Chapter 340, Division 16. The result is displayed in the following table.

	<u>Eligible Facility Cost</u>	<u>Percent Allocable</u>	<u>Amount Allocable</u>
Corrosion Protection:			
STI-P3 tank & fiberglass piping	\$ 8,868	41%(1)	\$ 3,636
Spill & Overfill Prevention:			
Spill containment basins	540	100	540
Leak Detection:			
Tank monitor w/overfill alarm	5,765	90 (2)	5,189
Monitoring wells	241	100	241
Labor & materials (includes automatic shutoff valves)	<u>10,773</u>	<u>100</u>	<u>10,773</u>
Total	\$26,187	78%	\$20,379

- (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 \$8,868 and the bare steel system is \$5,221, the resulting portion of the eligible tank and piping cost allocable to pollution control is 41%.
- (2) The applicant's cost for a tank monitor 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 and water. This is accomplished by preventing releases in soil or water. 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 78%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$26,187 with 78% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3495.

Barbara J. Anderson:ew
(503) 229-5870
May 9, 1991

State of Oregon
Department of Environmental Quality
TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Alan Bowdish Inc.
15905 SW Boones Ferry Road
Lake Oswego, Oregon 97219

The applicant owns and operates an auto air conditioner coolant recovery and recycling machine in Lake Oswego, Oregon.

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

2. Description of Facility

Facility is a machine which removes and cleans auto air conditioner coolant. The machine is self contained and includes pumps, tubing, valves and filters which rid the spent coolant of oil, excess air, water, acids and contaminant particles.

The applicant has identified the useful life of the equipment to be 3 years.

Claimed Facility Cost: \$3000.00
(Costs have been documented)

3. 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 the facility was determined substantially completed on April 15, 1991, and the application for certification was filed on May 9, 1991, within two years of substantial completion.

4. Evaluation of Application

- a. The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275. The requirement is to comply with ORS 468.612-621 and OAR 340-22-410 to 415.

Eligible equipment must be certified by Underwriters Laboratory (UL) as meeting the requirements and specifications of UL1963 and the Society of Automotive Engineers (SAE) standards, J1990 and J1991, or other requirements and specifications determined by the Department as being equivalent. The facility meets these requirements.

b. Eligible Cost Findings

In determining the percent of the 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 recovery and recycling machine serves two purposes. It prevents the release of spent auto A/C coolant to the environment, thereby meeting Department regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse as an auto A/C coolant.

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

The percent return on investment from facility use was calculated using coolant cost and retrieval rate data from the applicant and generic cost of facility operations estimated by the Department.

Specifically, the applicant estimated the cost to applicant of virgin coolant at \$5.57/pound. The applicant estimated an annual coolant recovery rate of 75 pounds.

In estimating the operating costs for use of the recovery and recycling machine, the Department developed a standardized methodology which considers the following factors:

- o Electricity consumption of machine
- o Additional labor to operate machine
- o Machine maintenance costs
- o Depreciation of machine

Based on these considerations, the applicant estimated the return on investment to be less than zero, in that machine operating costs exceeded income from the use of the machine.

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

The applicant has identified no alternatives.

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

There are savings from the facility to recover and reuse coolant. However, increases in business operations and maintenance costs exceeded facility savings. These cost estimates are discussed in 2) 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 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 principal purpose of the facility is to comply with a requirement imposed by the Department, to reduce air pollution.
- c. The facility complies with DEQ statutes and rules.
- 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 \$3000.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3496.

Jerry Coffey:JC
(503) 239-8644
May 15, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Kirsch Family Farms, Inc.
4350 Mahony Road NE
St. Paul, OR 97137

The applicant owns and operates a grass seed farm operation in St. Paul, Oregon.

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is listed below and is located at 4999 Mahony Road NE, St. Paul, Oregon. The equipment is owned by the applicant.

Allen 851 Hay Rake	\$ 6,000
Allen 852 Hay Rake	6,000
New Holland 505 Baler-1984	12,200
New Holland 505 Baler-1985	9,500
Freeman Balewagon	25,000
V-180 Forklift w/bale squeeze	21,000
80' x 200' straw storage shed	76,463
JD 14' flail mower	7,000
JD 945 'V' Ripper	2,344
International 770 Cover Crop Disc	9,550

Claimed equipment cost: \$175,057
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 1,100 acres of perennial grasses under cultivation. In the recent past the applicant would annually open field burn up to 300 acres, bale off and stack burn up to 700 acres, and propane flame up to 700 acres.

With acquisition of the listed equipment and facility, the applicant will remove the straw from the fields to the storage shed where it will be protected until marketing. Straw on an outgoing perennial crop field will be chopped and worked under. Both operations serving as alternatives to open field burning, stack burning and propane flaming on all of the applicant's 1,100 acres.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on July 15, 1990, and the application for final certification was found to be complete on May 15, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment is used to recover and convert waste products into a salable or usable commodity.

The equipment promotes the conversion of a waste product (straw) into a salable commodity by providing protection from the weather for approximately 1750 tons. Straw from the remaining acres (200-400) will be worked back into the soil.

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

The actual cost of the claimed equipment (\$175,057) divided by the average annual cash flow (\$212) equals a negative return on investment factor, therefore, 100% is allocable to pollution control.

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

The method chosen is an accepted and effective method for reduction of air pollution. The straw storage building is a truss steel construction with a concrete floor. This structure is preferred by the applicant to a less expensive standard pole building for several reasons including the following:

- concrete floor eliminates the need to destroy the lower layer of baled straw which results from moisture/rodent/rock intrusions on non-concrete floor.
- concrete floor is easier and less costly to maintain.
- concrete floor is level and allows stacking machinery to do a better job in close quarters and minimizes the chance for collisions with structure.
- truss structure is stronger than pole buildings and able to better withstand the frequent collisions with stacking equipment working in close proximity to the walls of the structure.
- truss structure will last longer than a pole building due to above reasons as well as steel vs. wood material.
- truss structure is less costly to maintain due to more rigid structure and more weathertight materials.

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

There is an increase in operating costs of \$42,212 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.

- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$175,057, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3498.

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

JB:bmTC3498
May 15, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

4 B Farms, Inc.
James Butsch, Sec.
15234 Butsch Lane NE
Mt. Angel, Oregon 97362

The applicant owns and operates a grass seed farm operation in Mt. Angel, Oregon.

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Rear's 12' Grass Vac with water system, located at 15234 Butsch Lane NE, Mt. Angel, Oregon. The equipment is owned by the applicant.

Claimed equipment cost: \$50,035
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 1,008 acres of perennial grasses under cultivation. Each year the applicant rotates the perennial stands on approximately 300 acres. Initially, the practice was to open field burn after harvesting the old stand and before planting the new stand. To reduce open field burning, the applicant turned to a six step process: raking the straw into windrows, contracting for custom baling, removing the bales from the field, flail chopping the remaining residue and stubble, loafing off the residue and propane flaming the fields. The applicant found the costs prohibitive.

The Grass Vac allows the applicant to consolidate three of the steps (flail chopping, loafing, and propaning) into one operation. The Grass Vac flail chops the residue and stubble, sucks the waste off the field into a loafing box, and eliminates propaning by sufficiently cleaning the field of waste, weed seeds, and volunteer seeds. By adding the water injection system to the Grass Vac, the applicant will be able to compost the loaves instead of burning them.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on March 25, 1991, and the application for final certification was found to be complete on May 8, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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 equipment 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 equipment is used to recover and convert waste products into a salable or usable commodity.

The equipment promotes the conversion of a waste product (straw) into a usable commodity by providing internal moisture to the loaves facilitating decomposition.

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

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 purchase of the equipment.

There is an increase in operating costs of \$17,500 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$50,035, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3946.

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

JB:bmTC3946
May 8, 1991

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

1. Applicant

Sherrill A. Funrue
2557 Driftcreek Road NE
Silverton, OR 97381

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

Application was made for tax credit for air pollution control equipment.

2. Description of Claimed Facility

The equipment described in this application is a Rear's 30' propane flamer, located at 2557 Driftcreek Road NE, Silverton, Oregon. The equipment is owned by the applicant (1/3 interest) and by Dennis Taylor (2/3 interest). The applicant is applying only for 1/3 of the \$8,165 actual cost of the equipment.

Claimed equipment cost: \$2,616
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 200 perennial and 50 annual acres of grass seed under cultivation. Over the last several years the applicant has gradually reduced the number of acres he has open field burned. He has achieved the reduction by clearing the fields of bulk straw with his side delivery rake, piling the straw with his buckrake, burning the piles fieldside, and propaning the cleared fields. This operation has reduced open field burning by 125 acres.

This new 30' propane flamer will enable the applicant to increase propaning by an additional 70 acres, proportionally reducing open field burning.

4. Procedural Requirements

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

Purchase of the equipment was substantially completed on June 1, 1990, and the application for final certification was found to be

complete on May 15, 1991. The application was submitted within two years of substantial purchase of the equipment.

5. Evaluation of Application

- a. The equipment is eligible because the principal purpose of the facility is to reduce a substantial quantity of air pollution.

This reduction is accomplished by reduction of air contaminants, defined in ORS 468.275; 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)(B): "Propane flammers or mobile field sanitizers which are alternatives to open field burning and reduce air quality impacts".

- b. Eligible Cost Findings

In determining the percent of the pollution control equipment 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 equipment 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. The propane flamer provides an alternate sanitization method to open field burning.

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

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 purchase of the equipment.

There is an increase in operating costs of \$660 to annually maintain and operate the equipment. 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 equipment 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 equipment properly allocable to prevention, control or reduction of air pollution.

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

6. Summation

- a. The equipment was purchased in accordance with all regulatory deadlines.
- b. The equipment is eligible for final tax credit certification in that the principal purpose of the facility is to reduce a substantial quantity of air pollution and accomplishes this purpose by the reduction of air contaminants, as defined in ORS 468.275.
- c. The equipment complies with DEQ statutes and rules.
- d. The portion of the equipment that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$2,616, with 100% allocated to pollution control, be issued for the equipment claimed in Tax Credit Application Number TC-3500.

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

JB:bmTC3500
May 15, 1991

REQUEST FOR EQC ACTION

Meeting Date: June 14, 1991

Agenda Item: C

Division: Air Quality

Section: Asbestos Program

SUBJECT:

Public Hearing Authorization: Asbestos Abatement Program
Rule Amendments and Rule Additions

PURPOSE:

The Department of Environmental Quality's (Department) Asbestos Control Program is submitting draft rules to the Environmental Quality Commission (EQC, Commission) requesting that the Commission authorize staff to hold rulemaking hearings. The purpose of this request is to receive comments on proposed rule changes from the National Emission Standard for Hazardous Air Pollutants (NESHAP) as required by Federal Environmental Protection Agency (EPA) delegation.

The Department also proposes rule refinements that will streamline and clarify certain areas of the existing regulations.

ACTION REQUESTED:

- Work Session Discussion
- General Program Background
- Potential Strategy, Policy, or Rules
- Agenda Item ___ for Current Meeting
- Other: (specify)



511 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696

Meeting Date: June 14, 1991
Agenda Item: C
Page 2

- Authorize Rulemaking Hearing
- Adopt Rules
 - Proposed Rules Attachment A
 - Rules Explanation Attachment B
 - Rulemaking Statements Attachment C
 - Fiscal and Economic Impact Statement Attachment D
 - Public Notice Attachment E
- Issue a Contested Case Order
- Approve a Stipulated Order
- Enter an Order
 - Proposed Order Attachment
- Approve Department Recommendation
 - Variance Request Attachment
 - Exception to Rule Attachment
 - Informational Report Attachment
 - Other: (specify) Attachment

DESCRIPTION OF REQUESTED ACTION:

The Department proposes public hearings to receive comments on amendments and changes to the asbestos rules. These amendments and changes would:

- Create and amend definitions to incorporate NESHAP and Department definition changes into the Department's existing definitions in Oregon Administrative Rule (OAR) 340-25-455 and 340-33-020;
- Create and amend notification requirements to incorporate NESHAP and Department rule changes into the Department's existing rules (OAR 340-25-465(5));
- Create and amend work practice regulations to incorporate NESHAP and Department rule changes into the Department's existing rules (OAR 340-25-465(6));
- Create and amend work practice regulations for storage, transport, disposal, and tracking of asbestos-containing waste material at active disposal sites to incorporate NESHAP and Department rule changes into the Department's existing rules (OAR 340-25-465(13));
- Create work practice regulations for inactive disposal sites to incorporate NESHAP rule changes into the Department's existing rules (OAR 340-25-465(14));
- Create a new requirement in the general provisions section of the asbestos certification regulations to ensure that Department inspectors are provided access to all projects including secure sites (OAR 340-33-030(11)), and

- Amend certification requirements to accommodate Department rule changes.

For more information on these changes see attachments A and B.

AUTHORITY/NEED FOR ACTION:

<input type="checkbox"/> Required by Statute: _____	Attachment _____
Enactment Date: _____	
<input checked="" type="checkbox"/> Statutory Authority: <u>ORS 468.893, 468.020</u>	Attachment _____
<input type="checkbox"/> Pursuant to Rule: _____	Attachment _____
<input checked="" type="checkbox"/> Pursuant to Federal Law/Rule: <u>40 CFR 61.141 through 61.156</u>	Attachment _____
<input type="checkbox"/> Other: _____	Attachment _____
<input type="checkbox"/> Time Constraints: (explain)	

DEVELOPMENTAL BACKGROUND:

<input checked="" type="checkbox"/> Advisory Committee Report/Recommendation	Attachment <u>F</u>
<input type="checkbox"/> Hearing Officer's Report/Recommendations	Attachment _____
<input type="checkbox"/> Response to Testimony/Comments	Attachment _____
<input type="checkbox"/> Prior EQC Agenda Items: (list)	Attachment _____
<input type="checkbox"/> Other Related Reports/Rules/Statutes:	Attachment _____
<input checked="" type="checkbox"/> Supplemental Background Information	Attachment <u>G</u>

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

1. Delegation of authority to the Department by EPA under the NESHAP rule of the Clean Air Act, requires that Department regulations are at least as stringent as the NESHAP rule.
2. Changes to existing regulations that govern point sources for asbestos manufacturing are minor. The Department does not anticipate resistance to these changes, because no major asbestos point sources or manufacturing sites exist in the State.
3. Changes in existing asbestos definitions would help clarify sections of the Department's asbestos regulations as well as the newly incorporated changes. The Department anticipates no objections to the definition changes.
4. Most of the proposed notification rule changes are minor, and since the Department has been requiring most of the new NESHAP notification procedures for approximately the last three years, staff does not believe a burden would be placed on asbestos

contractors. The Department believes these changes would serve to clarify existing notification regulations. However, the Department does propose a change in the notification procedures for large-scale projects that are scheduled for longer than one year. This would require contractors to re-file notifications and re-submit fees annually on large-scale projects that continue for more than one year.

5. New federal NESHAP regulations would be less stringent than existing Department requirements, primarily because it would allow all but the most deteriorated asbestos-containing resilient floor coverings to remain in place during demolition. OAR 340-25-465(6)(i) requires that all asbestos abatement projects that encompass 260 linear or 160 square feet of asbestos-containing material (ACM) within a containment be cleared to 0.01 fibers per cubic centimeter (f/cc) or less prior to removing the containment. Because of studies that show fiber release above the established clearance level of .01 fibers per cubic centimeter during resilient floor covering removal (see Attachment G), the Department is particularly concerned when these materials are subject to the greater mechanical forces of demolition.

In addition, EPA based its new nonfriable definition on a literature survey which yielded admittedly "uncertain" findings that these materials appear to have a lower potential for fiber release. (Fed. Reg. Vol. 55, No. 224 Tuesday Nov. 20, 1990 page 48409.)

The Department's review of literature has revealed that high concentrations of asbestos fibers can be released during removal of two forms of resilient floor covering - asbestos-containing tile and asbestos-backed sheet vinyl. During building demolition, most materials are reduced to small pieces by intense mechanical force, and there are no precautions other than possible wetting, to control potential fiber releases. Allowing asbestos-containing resilient floor coverings to remain in place during demolition would increase the likelihood of public and environmental exposure to asbestos fibers.

The new NESHAP rule re-defines the meaning of nonfriable materials by separating the definition into two categories - Category I and Category II nonfriable materials. These categories were intended to clarify which nonfriable materials are regulated, and specify which materials could remain in a structure during demolition. Category I materials (asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than one

percent asbestos) may remain in place during demolition unless their binding material is "losing its integrity as indicated by peeling, cracking or crumbling," or they are friable. The EPA based its new requirements for category I nonfriable materials on "uncertain" findings that fiber releases appeared minimal and substantially lower than for friable materials.

Category II materials (any nonfriable material not included in Category I) may remain in place during demolition if there is a low probability that they "will become crumbled, pulverized, or reduced to powder during demolition."

The Department's rules require removal of ACMs prior to demolition, but exempt nonfriable ACMs that will not be "shattered, crumbled, pulverized or reduced to dust until disposed of in an authorized disposal site" and do not become friable and release asbestos fibers into the environment. The Department has interpreted this rule to require removal of asbestos-containing resilient floor covering, and any other nonfriable materials that would likely shatter and become pulverized during demolition. The Department allows asbestos-containing roofing materials in good condition, nonfriable ACMs in the form of gaskets or packing encased in concrete, or similar material to remain in place during demolition. These interpretations have been communicated widely to the regulated community in the form of bulletins, newsletters and presentations.

The Department is also concerned that, because of its complexity, the new NESHAP definition of nonfriable materials would cause confusion and misapplication of asbestos regulations. In addition, waste generated from the demolition of a structure containing vinyl asbestos tile or asbestos backed sheet vinyl would be contaminated with asbestos debris and require special handling and disposal.

A construction or demolition contractor may incur less initial cost demolishing a structure where asbestos-containing resilient floor covering remained in place. However, other costs may be incurred because of Oregon Occupational Safety & Health Division regulations requiring a contractor to monitor worker asbestos exposure and provide adequate respiratory protection. Increased costs may also be incurred due to Department requirements that they treat demolition debris as asbestos-containing waste material, because of asbestos contamination in the debris.

For a summary or information on fiber releases from resilient floor covering removal, see attachment G.

6. Changes to the work practice section of the asbestos regulations are intended to clarify certain methods and procedures to be used for the discovery of unsafe materials during removal of certain building components. The Department does not anticipate opposition to these changes.
7. Changes to the disposal section of the federal NESHAP asbestos rules requires re-writing of the existing Oregon rules.

The NESHAP rule includes the following changes:

Separate requirements for active and inactive disposal sites; adding requirements for signs during loading and unloading of asbestos waste transport vehicles; adding requirements for tracking asbestos from the job site to final disposal; adding requirements for recordkeeping and for disposal tracking; and adding specific reporting requirements for disposal of loads where a discrepancy exists with the amount of material documented for disposal.

The Department has incorporated all of these changes into the proposed rules and anticipates many comments from the regulated community on the new reporting requirements. These new requirements would place an additional burden on both waste generators and waste disposal operators.

8. In accordance with Section 15, Chapter 744, Oregon Laws 1987, Department staff met with and received comments from the Asbestos Advisory Board on the proposed rules. These comments are located in Attachment F.

PROGRAM CONSIDERATIONS:

The proposed rule changes may have a moderate effect on the Asbestos Program's resources and personnel. New and amended forms would result in the receipt of increased information. This additional work could be handled by existing staff.

Some rule changes may require Asbestos Program Inspectors to spend more time at project sites during inspections. The rule changes would increase the protection of the environment by specifying work practices and disposal requirements.

Meeting Date: June 14, 1991
Agenda Item: C
Page 7

The Department expects better compliance from asbestos abatement projects, because these rule changes would further clarify Department requirements for handling asbestos during all phases of asbestos abatement.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

1. One alternative would be to adopt the NESHAP rules as promulgated by the EPA. This alternative was rejected because the NESHAPs rules as written are unnecessarily lengthy and complex.
2. The second alternative and the one preferred by the Department, would be to incorporate relevant sections of the new NESHAP rule into existing Department asbestos regulations.
3. A third alternative considered by the Department was to incorporate the new NESHAP nonfriable materials definition as promulgated by the EPA, rather than retain the existing State nonfriable materials rule. The Department favors retention of the existing standard which is more protective of public health.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department's delegation agreement with EPA requires that all NESHAP regulations that are more stringent than the Department's existing asbestos regulations be incorporated into the Department's regulations.

The Department has accumulated several suggested housekeeping rule revisions since the last rule change. These changes are necessary to further clarify existing rules. The Department met with the Oregon Asbestos Advisory Board (OAAB) on May 3, 1991, at which time these rule changes were discussed. The rule changes made by the asbestos staff are consistent with comments received by the OAAB.

The Department recommends that public hearings be authorized for these draft rules.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

These rule changes are consistent with Department strategic goals to aggressively identify threats to public health or the environment and take steps to prevent problems which may be created.

Meeting Date: June 14, 1991
Agenda Item: C
Page 8

ISSUES FOR COMMISSION TO RESOLVE:

1. Should the Department adopt the new NESHAP regulations as promulgated, or incorporate the NESHAP rule into existing Department asbestos regulations?
2. Should the Department adopt the new NESHAP definition for nonfriable materials and relax this standard or should the Department keep the existing regulation that is more stringent?

INTENDED FOLLOWUP ACTIONS:

June 14, 1991	Provide hearing notice to Secretary of State
July 1, 1991	Secretary of State bulletin publishes notice
July 16, 1991	First hearing (location to be announced) Second hearing (location to be announced)
July 17, 1991	Third hearing (location to be announced) Fourth hearing (location to be announced)
Aug. 14, 1991	Prepare final staff report and Hearing Officer's report
Sep. 13, 1991	Submit final rules to EQC for adoption

Approved:

Section: Sarah K. Amfaji
Division: John Greenwood
Director: Jul Hansen

Report Prepared By: David E. Wall

Phone: (503) 229-5364

Date Prepared: May 28, 1991

DEW:a
ASB\AH12\AH13044
May 28, 1991

OREGON ADMINISTRATIVE RULES
DEPARTMENT OF ENVIRONMENTAL QUALITY
CHAPTER 340 DIVISION 25

DRAFT RULES MAY 5, 1991

POLICY

340-25-450 The Commission finds and declares that certain air contaminants for which there is no ambient air standard may cause or contribute to an identifiable and significant increase in mortality or to an increase in serious irreversible or incapacitating reversible illness, and are therefore considered to be hazardous air contaminants. Air contaminants currently considered to be in this category are asbestos, beryllium, and mercury. Additional air contaminants may be added to this category provided that no ambient air standard exists for the contaminant, and evidence is presented which demonstrates that the particular contaminant may be considered as hazardous. It is hereby declared the policy of the Department that the standards contained herein and applicable to operators are to be minimum standards, and as technology advances, conditions warrant, and Department or regional authority rules require or permit, more stringent standards shall be applied.

Stat. Auth.: ORS Ch.

Hist: DEQ 96, f. 9-2-75, ef. 9-25-75

DEFINITIONS

340-25-455 As used in this rule, and unless otherwise required by context:

(1) "Adequately wet" means to sufficiently mix or penetrate asbestos-containing material with liquid to prevent the release of particulate asbestos materials. The absence of visible emissions is not sufficient evidence of being adequately wet.

{(1)} (2) "Asbestos" means ~~the~~ the asbestiform varieties of serpentine (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite (amosite), anthophyllite, actinolite and tremolite."

{(2)} (3) "Asbestos-containing waste material" means any waste which contains mill tailings or any commercial asbestos and is generated by a source subject to the provisions of this subpart, or friable asbestos material including, but not limited to, asbestos mill tailings, control device asbestos waste, friable asbestos waste material, asbestos abatement project waste, and bags or containers that previously contained commercial asbestos.

{(3)} (4) "Asbestos abatement project" means any demolition, renovation, repair, construction or maintenance activity of any public or private facility that involves the repair, enclosure, encapsulation, removal, salvage, handling or disposal of any material with the potential of releasing asbestos fibers from asbestos-containing material into the air."

NOTE: An asbestos abatement project is not considered to be a source under OAR 340-25-460(2) through (6). Emergency fire fighting is not an asbestos abatement project.

~~{(4)}~~ (5) "Asbestos manufacturing operation" means the combining of commercial asbestos, or in the case of woven friction products, the combining of textiles containing commercial asbestos with any other material(s) including commercial asbestos, and the processing of this combination into a product as specified in rule 40-25-465.

~~{(5)}~~ (6) "Asbestos-containing material" means asbestos or any material containing more than one percent (1%) asbestos by weight, including particulate asbestos material.

~~{(6)}~~ (7) "Asbestos mill" means any facility engaged in the conversion or any intermediate step in the conversion of asbestos ore into commercial asbestos.

~~{(7)}~~ (8) "Asbestos tailings" means any solid waste product of asbestos mining or milling operations which contains asbestos.

~~{(8)}~~ (9) "Beryllium" means the element beryllium. Where weight or concentrations are specified in these rules, such weights or concentrations apply to beryllium only, excluding any associated elements.

~~{(9)}~~ (10) "Beryllium alloy" means any metal to which beryllium has been added in order to increase its beryllium content, and which contains more than 0.1 percent beryllium by weight.

~~{(10)}~~ (11) "Beryllium containing waste" means any material contaminated with beryllium and/or beryllium compounds used or generated during any process or operation performed by a source subject to these rules.

~~{(11)}~~ (12) "Beryllium ore" means any naturally occurring material mined or gathered for its beryllium content.

~~{(12)}~~ (13) "Commercial asbestos" means any variety of asbestos which is produced by extracting asbestos from asbestos ore.

~~{(13)}~~ (14) "Commission" means the Environmental Quality Commission.

~~{(14)}~~ (15) "Demolition" means the wrecking or removal of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.

~~{(15)}~~ (16) "Department" means the Department of Environmental Quality.

~~{(16)}~~ (17) "Director" means the Director of the Department or regional authority and authorized deputies or officers.

~~{(17)}~~ (18) "Fabricating" means any processing (e.g., cutting, sawing, drilling) of a manufactured product that contains commercial asbestos, with the exception of processing at temporary sites (field fabricating) for the construction or restoration of facilities. In the case of friction products, fabricating includes bonding, debonding, grinding, sawing, drilling, or other similar operations performed as part of fabricating.

(19) "Facility" means all or part of any public or private building, structure, installation, equipment, or vehicle or vessel, including but not limited to ships.

~~{(19)}~~ (20) "Friable asbestos material" means any asbestos-containing material that hand pressure can crumble, pulverize or reduce to powder when dry.

(21) "Fugitive emissions" means any emissions which escape from a point or area that is not identifiable as a stack, vent duct or equivalent opening.

~~{(19)}~~ (22) "Hazardous air contaminant" means any air contaminant considered by the Department or Commission to cause or contribute to an identifiable and significant increase in mortality or to an increase in serious irreversible or incapacitating reversible illness and for which no ambient air standard exists.

~~{(20)}~~ (23) "HEPA filter" means a high efficiency particulate air filter capable of filtering 0.3 micron particles with 99.97 percent efficiency.

(24) "Inactive waste disposal site" means any disposal site where the operator has allowed the Department's solid waste permit to lapse, has gone out of business, or no longer receives asbestos-containing waste.

~~{(21)}~~ (25) "Interim storage of asbestos containing material" means the storage of asbestos-containing waste material which has been placed in a container outside a regulated area until transported to an authorized landfill.

~~{(22)}~~ (26) "Mercury" means the element mercury, excluding any associated elements and includes mercury in particulates, vapors, aerosols, and compounds.

~~{(23)}~~ (27) "Mercury ore" means any mineral mined specifically for its mercury content.

~~{(24)}~~ (28) "Mercury ore processing facility" means a facility processing mercury ore to obtain mercury.

~~{(25)}~~ (29) "Mercury chlor-alkali cell" means a device which is basically composed of an electrolyzer section and a denuder (decomposer) section, and utilizes mercury to produce chlorine gas, hydrogen gas, and alkali metal hydroxide.

(30) "Nonfriable asbestos-containing material" means any material containing more than one (1%) percent asbestos as determined by weight that when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.

~~{(26)}~~ (31) "Particulate asbestos material" means any finely divided particles of asbestos material.

~~{(27)}~~ (32) "Person" means any individual, corporation, association, firm, partnership, joint stock company, public and municipal corporation, political sub-division, the state and any agency thereof, and the federal government and any agency thereof.

~~{(28)}~~ (33) "Propellant" means a fuel and oxidizer physically or chemically combined, containing beryllium or beryllium compounds, which undergoes combustion to provide rocket propulsion.

~~{(29)}~~ (34) "Propellant plant" means any facility engaged in the mixing, casting, or machining of propellant.

~~{(30)}~~ (35) "Regional authority" means any regional air quality control authority established under the provisions of ORS 468.505.

~~{(31)}~~ (36) "Renovation" means altering in any way one or more facility components. Operations in which load-supporting structural members are wrecked or removed are excluded.

(37) "Roadways" means surfaces on which vehicles travel. This term includes public and private highways, roads, streets, parking areas and driveways.

~~{(32)}~~ (38) "Small-scale asbestos abatement project" means any asbestos abatement project which meets the definition given in OAR 340-33-020(17).

~~{(33)}~~ (39) "Small scale, short duration renovating and maintenance activity" means an activity which meets the definition given in OAR 340-33-020(18).

~~{(34)}~~ (40) "Startup" means commencement of operation of a new or modified source resulting in release of contaminants to the ambient air.

~~{(35)}~~ (41) "Structural member" means any load-supporting member of a facility, such as beams and load-supporting walls; or any non-supporting member, such as ceilings and non-load-supporting walls.

(42) "Waste generator" means any person performing an asbestos abatement project or any owner or operator of a source covered by this section whose act or process generates asbestos-containing waste material.

(43) "Waste shipment record" means the shipment document, required to be originated and signed by the waste generator; used to track and substantiate the disposition of asbestos-containing waste material.

Stat. Auth.: ORS Ch. 468

Hist: DEQ 96, f.9-2-75, ef. 9-25-75; DEQ 22-1982, f. & ef. 10-21-82

GENERAL PROVISIONS

340-25-460 (1) Applicability. The provisions of these rules shall apply to any source which emits air contaminants for which a hazardous air contaminant standard is prescribed. Compliance with the provisions of these rules shall not relieve the source from compliance with other applicable rules of the Oregon Administrative Rules, Chapter 340, or with applicable provisions of the Oregon Clean Air Implementation Plan.

(2) Prohibited activities:

(a) No person shall construct, install, establish, develop or operate any source of emissions subject to these rules without first obtaining an Air Contaminant Discharge Permit in accordance with OAR 340-20-140 through 340-20-185.

(b) ~~{After the effective date of these rules,}~~ No person shall modify any existing source such that emissions of contaminants subject to these rules are significantly increased without first applying for and obtaining a modified permit.

(c) No person subject to the provisions of these emission standards shall fail to provide reports or report revisions as required in these rules.

(3) Application for approval of construction or modification. All applications for construction or modification shall comply with the requirements of OAR 340-20-140 through OAR 340-20-185 and the requirements of the standards set forth in these rules.

(4) Notification of startup. Notwithstanding the requirements of rules OAR 340-20-140 through OAR 340-20-185, any person owning or operating a new source of emissions subject to these emission standards shall furnish the Department written notification as follows:

(a) Notification of the anticipated date of startup of the source not more than ~~[sixty]~~ ~~[+60]~~ days nor less than ~~[thirty]~~ ~~[+30]~~ days prior to the anticipated date.

(b) Notification of the actual startup date of the source within ~~[fifteen]~~ ~~[+15]~~ days after the actual date.

(5) Source reporting and approval request. Any person operating any existing source, or any new source for which a standard is prescribed in these rules which had an initial startup which preceded the effective date of these rules shall provide the following information to the Department within ~~[ninety]~~ ~~[+90]~~ days of the effective date of these rules:

(a) Name and address of the owner or operator.

(b) Location of the source.

(c) A brief description of the source, including nature, size, design, method of operations, design capacity, and identification of emission points of hazardous contaminants.

(d) The average weight per month of materials being processed by the source and percentage by weight of hazardous contaminants contained in the processed materials, including yearly information as available.

(e) A description of existing control equipment for each emission point, including primary and secondary control devices and estimated control efficiency of each control device.

(6) Source emission tests and ambient air monitoring:

(a) Emission tests and monitoring shall be conducted using methods set forth in 40 CFR, Part 61, Appendix B, as published in the Code of Federal Regulations last amended by the Federal Register, June 1, 1987, at 52 FR 20398. The methods described in 40 CFR, Part 61, Appendix B, are adopted by reference and made a part of these rules. Copies of these methods are on file at the Department of Environmental Quality.

(b) At the request of the Department, any source subject to standards set forth in these rules may be required to provide emission testing facilities as follows:

(A) Sampling ports, safe sampling platforms, and access to sampling platforms adequate for test methods applicable to such source.

(B) Utilities for sampling and testing equipment.

(c) Emission tests may be deferred if the Department determines that the source is meeting the standard as proposed in these rules. If such a deferral of emission tests is requested, information supporting the request shall be submitted with the request for written approval of operation. Approval of a deferral of emission tests shall not in any way prohibit the Department from canceling the deferral if further information indicates that such testing may be necessary to insure compliance with these rules.

(7) Delegation of authority. The Commission may, when any regional authority requests and provides evidence demonstrating its capability to carry out the provisions of these rules relating to hazardous contaminants, authorize and confer jurisdiction within its boundary until such authority and jurisdiction shall be withdrawn for cause by the Commission.

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

Stat. Auth.: ORS Ch. 468

Hist: DEQ 96, f. 9-2-75, ef. 9-25-75; DEQ 22-1982, f. & ef. 10-21-82

EMISSION STANDARDS AND PROCEDURAL REQUIREMENTS FOR ASBESTOS

340-25-465 (1) Emission standard for asbestos mills. No person shall cause to be discharged into the atmosphere any visible emissions from any asbestos milling operation, including fugitive emissions, except as provided under Air Cleaning section (10) of this rule. For purposes of these rules, the presence of uncombined water in the emission plume shall not be cause for failure to meet the visible emission requirement. Outside storage of asbestos materials is not considered a part of an asbestos mill. Each owner or operator of an asbestos mill shall meet the following requirements:

(a) Monitor each potential source of asbestos emissions from any part of the mill facility, including air cleaning devices, process equipment, and buildings that house equipment for material processing and handling, at least once each day, during daylight hours, for visible emissions to the outside air during periods of operations. The monitoring shall be by visual observation of at least 15 seconds duration per source of emissions.

(b) Inspect each air cleaning device at least once each week for proper operation and for changes that signal the potential for malfunction including, to the maximum extent possible without dismantling other than opening the device, the presence of tears, holes, and abrasions in filter bags and for dust deposits on the clean side of bags. For air cleaning devices that cannot be inspected on a weekly basis according to this paragraph, submit to the Department, and revise as necessary, a written maintenance plan to include, at a minimum, the following:

(A) Maintenance schedule.

(B) Recordkeeping plan.

(c) Maintain records of the results of visible emissions monitoring and air cleaning device inspections using a format approved by the Department which includes the following:

- (A) Date and time of each inspection
- (B) Presence or absence of visible emissions.
- (C) Condition of fabric filters, including presence of any tears, holes, and abrasions.
- (D) Presence of dust deposits on clean side of fabric filters.
- (E) Brief description of corrective actions taken, including date and time.
- (F) Daily hours of operation for each air cleaning device.
- (d) Furnish upon request, and make available at the affected facility during normal business hours inspection by the Department, all records required under this section.
- (e) Retain a copy of all monitoring and inspection records for at least two years.
- (f) Submit a copy of visible emission monitoring records to the Department quarterly. The quarterly reports shall be postmarked by the 30th day following the end of the calendar quarter.

(g) Asbestos waste produced by any asbestos milling operation will be disposed of according to OAR 340-25-464(13) and (14).

(2) Roadways and Parking Lots. [~~The surfacing of roadways, parking lots or any other surface covering on which vehicle traffic might reasonably be expected to occur, with asbestos tailings or asbestos material is prohibited, except for temporary roadways on an area of asbestos ore deposits. For purposes of these rules, the deposition of asbestos tailings on roadways covered by snow or ice is considered surfacing.~~]

No person may construct or maintain a roadway with asbestos tailings or asbestos-containing waste material on that roadway, unless (for asbestos tailings):

- (a) It is a temporary roadway on an area of asbestos ore deposits (asbestos mine); or
- (b) It is a temporary roadway at an active asbestos mill site and is encapsulated with a resinous or bituminous binder. The encapsulated road surface must be maintained at a minimum frequency of once per year to prevent dust emissions; or
- (c) It is encapsulated in asphalt concrete meeting the specifications contained in section 401 of Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-85, 1985, or their equivalent.

(3) Manufacturing. No person shall cause to be discharged into the atmosphere any visible emissions, except as provided in Air Cleaning section (10) of this rule, from any building or structure in which manufacturing operations utilizing commercial asbestos are conducted, or directly from any such manufacturing operations if they are conducted outside buildings or structures, or from any other fugitive emissions. All asbestos waste produced by any manufacturing operation shall be disposed of according to OAR 340-25-465(13) and (14). Visible emissions from boilers or other points not producing emissions directly from the manufacturing operation; and having no possible asbestos material in the exhaust gases, shall not be considered for purposes of this

rule. The presence of uncombined water in the exhaust plume shall not be cause for failure to meet the visible emission requirements.

(a) Applicability. Manufacturing operations considered for purposes of these rules are as follows:

~~[(a)]~~ (A) The manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, or other textile materials.

~~[(b)]~~ (B) The manufacture of cement products.

~~[(c)]~~ (C) The manufacture of fire proofing and insulating materials.

~~[(d)]~~ (D) The manufacture of friction products.

~~[(e)]~~ (E) The manufacture of paper, millboard, and felt.

~~[(f)]~~ (F) The manufacture of floor tile.

~~[(g)]~~ (G) The manufacture of paints, coatings, caulks, adhesives, or sealants.

~~[(h)]~~ (H) The manufacture of plastics and rubber materials.

~~[(i)]~~ (I) The manufacture of chlorine, using asbestos diaphragm technology.

~~[(j)]~~ (J) The manufacture of shotgun shell~~s~~ wads.

~~[(k)]~~ (K) The manufacture of asphalt concrete.

~~[(l)]~~ (L) Any other manufacturing operation which results or may result in the release of asbestos material to the ambient air.

(b) Monitor each potential source of asbestos emissions from any part of the manufacturing facility, including air cleaning devices, process equipment, and buildings housing material processing and handling equipment, at least once each day during daylight hours for visible emissions to the outside air during periods of operation. The monitoring shall be visual observation of at least 15 seconds.

(c) Inspect each air cleaning device at least once each week for proper operation and for changes that signal the potential for malfunctions, including, to the maximum extent possible without dismantling other than opening the device, the presence of tears, holes, and abrasions in filter bags and for dust deposits on the clean side of bags. For air cleaning devices that cannot be inspected on a weekly basis according to this paragraph, submit to the Department, revise as necessary, and implement a written maintenance plan to include, at a minimum, the following:

(A) Maintenance schedule.

(B) Recordkeeping plan.

(d) Maintain records of the results of visible emission monitoring and air cleaning device inspections using a format approved by the Department which includes the following:

(A) Date and time of each inspection.

(B) Presence or absence of visible emissions.

(C) Condition of fabric filters, including presence of any tears, holes and abrasions.

(D) Presence of dust deposits on clean side of fabric filters.

(E) Brief description of corrective actions taken, including date and time.

(F) Daily hours of operation for each air cleaning device.

(e) Furnish upon request, and make available at the affected facility during normal business hours for inspection by the Department, all records required under this section.

(f) Retain a copy of all monitoring and inspection records for at least two years.

(g) Submit quarterly a copy of the visible emission monitoring records to the Department if visible emissions occurred during the report period. Quarterly reports shall be postmarked by the 30th day following the end of the calendar quarter.

(h) Asbestos waste produced by any asbestos milling operation shall be disposed of according to OAR 340-25-465(13) and (14).

(4) Asbestos abatement projects. Any person who conducts an asbestos abatement project shall comply with OAR 340-25-465(5), (6), and (7). The following asbestos abatement projects are exempt from these requirements:

(a) Asbestos abatement conducted in a private residence which is occupied by the owner and the owner-occupant performs the asbestos abatement.

(b) Removal of nonfriable asbestos-containing materials that are not shattered, crumbled, pulverized or reduced to dust until disposed of in an authorized disposal site. This exemption shall end whenever the asbestos containing material becomes friable ~~and~~ or releases asbestos fibers into the environment.

(c) Removal of less than three ~~{3}~~ square feet or three ~~{3}~~ linear feet of asbestos-containing material provided that the removal of asbestos is not the primary objective and methods of removal are in compliance with OAR 437 Division 3 "Construction" (29 CFR 1926 Appendix G to 1926.58). An asbestos abatement project shall not be subdivided into smaller sized units in order to qualify for this exemption.

(d) Removal of asbestos-containing materials which are sealed from the atmosphere by a rigid casing, provided that the casing is not broken or otherwise altered such that asbestos fibers could be released during removal, handling, and transport to an authorized disposal site.

NOTE: The requirements and jurisdiction of the Department of Insurance and Finance, Oregon Occupational Safety and Health Division and any other state agency are not affected by these rules.

(5) Notification Requirements. Written notification of any asbestos abatement project shall be provided to the Department on a Department form. The notification must be submitted by the facility owner or operator or by the contractor in accordance with one of the procedures specified in subsection (a) or (b), below except as provided in subsections (c) (d) and (f) below.

(a) Submit the notifications as specified in subsection (c) below and the project notification fee to the Department at least ten days before beginning any asbestos abatement project.

(A) The project notification fee shall be:

(i) \$25 for each small-scale asbestos abatement project except for small-scale projects in residential buildings described in OAR 340-25-465(5)(d).

(ii) \$50 for each project greater than a small-scale asbestos abatement project and less than 260 linear feet or 160 square feet.

(iii) \$200 for each project greater than 260 linear feet or 160 square feet, and less than 2600 linear feet or 1600 square feet.

(iv) \$500 for each project greater than 2600 linear feet or 1600 square feet.

(B) Project notification fees shall be payable with the completed project notification form. No notification will be considered to have occurred until the notification fee is submitted.

~~(C) [Notification of less than ten days (10) is permitted in case of an emergency involving protection of life, health or property or, after providing the Department verbal or written notification, where an unscheduled or unexpected event creates the opportunity to conduct an asbestos abatement project. Notification shall include the information contained in subsection (c) below, and the date of the contract if applicable. If original notification is provided by phone, written notification and the project notification fee shall be submitted within three (3) days after the start of such abatement projects.]~~ The ten day notification requirement in (5) (a) above may be temporarily waived in emergencies which directly affect human life, health and property. This includes:

(i) Emergencies where there is an imminent threat of loss of life or severe injury; or

(ii) Emergencies where the public is exposed to air-borne asbestos fibers; or

(iii) Emergencies where significant property damage will occur if repairs are not made.

~~(D) [The Department must be notified prior to any changes in the scheduled starting or completion dates or other substantial changes or the notification will be void.]~~ The ten day notification requirement in (5) (a) above may be temporarily waived for asbestos abatement projects which were not planned, resulted from unexpected events, and which if not immediately performed will cause damage to equipment or impose unreasonable financial burden. This includes the non-routine failure of equipment.

(E) In either (C) or (D) above persons responsible for such asbestos abatement projects shall notify the Department by telephone prior to commencing work, or by 9am of the next working day if the work was performed on a weekend or holiday. In any case notification as specified in (c) below and the appropriate fee shall be submitted to the Department within three days of commencing emergency or unexpected event asbestos abatement projects.

(F) The Department shall be notified prior to any changes in the scheduled starting or completion dates or other substantial changes or the notification will be void.

(G) When asbestos abatement projects equal to or greater than 2600 linear feet or 1600 square feet are increased by 25% or more, the Department requires a new fee.

(H) If an asbestos project, equal to or greater than 2600 linear feet or 1600 square feet continues for more than one year, a new notification and fee shall be submitted annually thereafter until the project is complete.

(b) For small-scale asbestos abatement projects conducted at one or more facilities by a single contractor or a single facility owner with centrally controlled asbestos operations and maintenance the notification may be submitted as follows:

(A) Establish eligibility for use of this notification procedure with the Department prior to use;

(B) Maintain on file with the Department a general asbestos abatement plan. The plan shall contain the information specified in subsections (c)(A) through (c)(I) below, to the extent possible;

(C) Provide to the Department a summary report of all small-scale asbestos abatement projects conducted in the previous three months by the 15th day of the month following the end of the calendar quarter. The summary report shall include the information specified in subsections (c)(J) through (c)(M) below for each project, a description of any significant variations from the general asbestos abatement plan; and a description of asbestos abatement projects anticipated for the next quarter;

(D) Provide to the Department, upon request, a list of asbestos abatement projects which are scheduled or are being conducted at the time of the request[-];

(E) Submit a project notification fee of \$200 per year prior to use of this notification procedure and annually thereafter while this procedure is in use[-]; and

(F) Failure to provide payment for use of this notification procedure shall void the general asbestos abatement plan and each subsequent abatement project shall be individually assessed a project notification fee.

(c) The following information shall be provided for each notification:

(A) Name and address of person conducting asbestos abatement.

(B) Contractor's Oregon asbestos abatement license number, if applicable, and certification number of the supervisor for full-scale asbestos abatement or certification number of the trained worker for a project which does not have a certified supervisor.

(C) Method of asbestos abatement to be employed.

(D) Procedures to be employed to insure compliance with OAR 340-25-465.

(E) Names, addresses, and phone numbers of waste transporters.

(F) Name and address or location of the waste disposal site where the asbestos-containing waste material will be deposited.

(G) Description of asbestos disposal procedure.

(H) Description of building, structure, facility, installation, vehicle, or vessel to be demolished or renovated, including: the age, present and prior use of the facility; address or location where the asbestos abatement project is to be accomplished.

(I) Facility owner's or operator's name, address and phone number.

(J) Scheduled starting and completion dates of asbestos abatement work.

(K) Description of the asbestos type, approximate asbestos content (percent), and location of the asbestos-containing material.

(L) Amount of asbestos to be abated: linear feet, square feet, thickness.

(M) Any other information requested on the Department form.

(N) For facilities described in (6)(e) provide the name, title and authority of the State or local government official who ordered the demolition, date the order was issued, and the date demolition is to begin.

(d) No project notification fee shall be assessed for asbestos abatement projects conducted in the following residential buildings: site-built homes, modular homes constructed off site, condominium units, mobile homes, and duplexes or other multi-unit residential buildings consisting of four units or less. Project notification for a full-scale asbestos abatement project, as defined in OAR 340-33-020(14), in any of these residential buildings shall otherwise be in accordance with subsection (5)(a) of this section. Project notification for a small-scale asbestos abatement project, as defined in OAR 340-33-020(17), in any of these residential buildings is not required.

(e) The project notification fees specified in this section shall be increased by 50% when an asbestos abatement project is commenced without filing of a project notification and/or submittal of a notification fee or when notification of less than ten days ~~{+10}~~ is provided under subsection (5)(a)(C) of this section.

(f) The Director may waive part or all of a project notification fee. Requests for waiver of fees shall be made in writing to the Director, on a case-by-case basis, and be based upon financial hardship. Applicants for waivers must describe the reason for the request and certify financial hardship.

(g) Pursuant to ORS 468.535, a regional authority may adopt project notification fees for asbestos abatement projects in different amounts than are set forth in this rule. The fees shall be based upon the costs of the regional authority in carrying out the delegated asbestos program. The regional authority may collect, retain, and expend such project notification fees for asbestos abatement projects within its jurisdiction.

(6) Work practices and procedures. The following procedures shall be employed during an asbestos abatement project to prevent emissions of particulate asbestos material into the ambient air:

(a) Remove asbestos-containing materials before any wrecking or dismantling that would break up the materials or preclude access to the materials for subsequent removal. However, asbestos-containing materials need not be removed before demolition if:

(A) They are on a facility component that is encased in concrete or other similar material; ~~{and}~~

(B) They were not discovered before demolition and cannot be removed because of unsafe conditions as a result of the demolition. If not removed for safety reasons, the exposed asbestos-containing material and any asbestos-contaminated waste material shall be adequately wet at all times until disposed of. In the event of such an occurrence the Department shall be notified immediately; such asbestos abatement removals shall be conducted by a licensed asbestos abatement contractor.

~~[(B)]~~ (C) These materials are adequately wetted whenever exposed during demolition.

(b) ~~[Adequately wet]~~ Asbestos-containing materials shall be adequately wetted when they are being removed. In renovation, maintenance, repair, and construction operations, where wetting ~~[that]~~ would unavoidably damage equipment or is incompatible with specialized work practices, or presents a safety hazard, adequate wetting is not required if the owner or operator:

(A) ~~[Demonstrates to the Department that wetting would unavoidably damage equipment,]~~ Obtains prior written approval from the Department for dry removal of asbestos-containing material;

(B) Keeps a copy of the Department's written approval available for inspection at the work site;

~~[(B)]~~ (C) Adequately wraps or encloses any asbestos-containing material during handling to avoid releasing fibers~~[-]~~; and

~~[(C)]~~ (D) Uses a local exhaust ventilation and collection system designed and operated to capture the particulate asbestos material produced by the asbestos abatement project.

(c) When a facility component covered or coated with asbestos-containing materials is being taken out of the facility as units or in sections:

(A) Adequately wet any asbestos-containing materials exposed during cutting or disjuncting operation; ~~[and]~~

(B) Carefully lower the units or sections to ground level, not dropping them or throwing them~~[-]~~; and

(C) Asbestos-containing materials do not need to be removed from large facility components such as reactor vessels, large tanks, steam generators, but excluding beams if the following requirements are met:

(i) The component is removed, transported, stored, disposed of, or reused without disturbing or damaging the regulated asbestos-containing material;

(ii) The component is encased in leak-tight wrapping; and

(iii) The leak-tight wrapping is labeled according to OAR 340-25-465(13)(c)(B) during all loading and unloading operations and during storage.

(d) For asbestos-containing materials being removed or stripped:

(A) Adequately wet the materials to ensure that they remain wet until they are disposed of in accordance with OAR 340-25-465(13) ~~[-]~~ and (14)

(B) Carefully lower the materials to the floor, not dropping or throwing them; ~~[and]~~

(C) Transport the materials to the ground via dust-tight chutes or containers if they have been removed or stripped above ground level and were not removed as units or in sections.

(e) If a facility is being demolished under an order of the State or a local governmental agency, issued because the facility is structurally unsound and in danger of imminent collapse, the requirements of subsections (a), (b), (c), (d), and (f) of this section shall not apply, provided that the portion of the facility that contains asbestos-containing materials is adequately wetted during the wrecking operation.

(f) Before a facility is demolished by intentional burning, all asbestos-containing material shall be removed and disposed of in accordance with OAR 340-25-465.

~~(f)~~ (g) None of the operations in subsections (a) through (d) of this section shall cause any visible emissions. Any local exhaust ventilation and collection system or other vacuuming equipment used during an asbestos abatement project, shall be equipped with a HEPA filter or other filter of equal or greater collection efficiency.

~~(g)~~ (h) Contractors licensed and workers certified to conduct only small-scale asbestos abatement projects under OAR 340-33-040 and 340-33-050 respectively may use only those work practices and engineering controls specified by OAR 437 Division 3 "Construction" (29 CFR 1926 Appendix G 1926.58) unless the Department authorizes other methods on a case-by-case basis. Small-scale short-duration renovating or maintenance activities meeting the definition OAR 340-33-020(18) and complying with work practices and engineering controls specified in Appendix G above may be exempted from OAR 437 Division 3 "Construction" (29 CFR 1926 to 1926.58) paragraphs (e)(6), (j)(1)(i) and (j)(2)(i)

~~(h)~~ (i) The Director may approve, on a case-by-case basis, requests to use an alternative to a specific worker or public health protection requirement as provided by these rules for an asbestos abatement project. The contractor or facility owner or operator must submit in advance a written description of the alternative procedure which demonstrates to the Director's satisfaction that the proposed alternative procedure provides worker and public health protection equivalent to the protection that would be provided by the specific provision, or that such level of protection cannot be obtained for the asbestos abatement project.

~~(i)~~ (j) Final Air Clearance Sampling Requirements apply to projects involving more than 160 square feet or 260 linear feet of asbestos-containing material. Before a containment around such an area is removed, the person(s), contractor or facility owner/operator performing the abatement ~~must~~ shall document that the air inside the containment has no more than 0.01 fibers per cubic centimeter of air. The air sample(s) collected ~~must~~ shall not exceed 0.01 fibers per cubic centimeter of air. The Department may grant a waiver to this section or exceptions to the following requirements upon written request.

~~(A)~~ (A) The air clearance samples shall be performed and analyzed by a party who is National Institute of Occupational Safety and Health (NIOSH) 582 certified and financially independent from the person(s) conducting the asbestos abatement project.

~~[B-]~~ (B) Before final air clearance sampling is performed the following shall be completed:

(i) All visible asbestos-containing debris shall be removed according to the requirements of this section~~[-]~~;

(ii) The air and surfaces within the containment shall be sprayed with an encapsulant~~[-]~~;

(iii) Air sampling may commence when the encapsulant has settled sufficiently so that the filter of the sample is not clogged by airborne encapsulant~~[-]~~;

(iv) Air filtration units shall remain on during the air monitoring period.

~~[C-]~~ (C) Air clearance sampling inside containment areas shall be aggressive and comply with the following procedures:

(i) Immediately prior to starting the sampling pumps, direct exhaust from a minimum one horse power forced air blower against all walls, ceilings, floors, ledges, and other surfaces in the containment.

(ii) Then place stationary fans in locations which will not interfere with air monitoring equipment and directed toward the ceiling. Use one fan per 10,000 cubic feet of room space.

(iii) Start sampling pumps and sample an adequate volume of air to detect concentrations of 0.01 fibers of asbestos per cubic centimeter according to the U.S. National Institute of Occupational Safety and Health, (NIOSH) 7400 method.

(iv) When sampling is completed turn off the pump and then the fan(s).

(v) As an alternative to meeting the requirements of (i) through (iv) of this section, air clearance sample analysis may be performed according to Transmission Electron Microscopy Analytical Methods prescribed by 40 CFR 763.99, Appendix A to Subpart E.

~~[D-]~~ (D) The person(s) performing asbestos abatement projects requiring air clearance sampling ~~[will]~~ shall ~~[insure-that]~~ submit, to the Department, ~~[receives-a-copy-of-the]~~ clearance results within ~~[thirty-(+)]30[-]~~ days after the monitoring procedures were performed.

(7) Related Work Practices and Controls Work practices and engineering controls employed for asbestos abatement projects by contractors and/or workers who are not otherwise subject to the requirements of the Oregon Department of Insurance and Finance, Oregon Occupational Safety and Health Division shall comply with the subsections of OAR 437 Division 3 "Construction" (29 CFR 1926 Appendix G to 1926.58) which limit the release of asbestos-containing material or exposure of other persons. As used in this subsection the term employer shall mean the operator of the asbestos abatement project and the term employee shall mean any other person.

(8) Spraying:

(a) No person shall cause to be discharged into the atmosphere any visible emissions from any spray-on application of materials containing more than one (1%) percent asbestos on a dry weight basis used to insulate or fireproof equipment or machinery, except as provided in Air Cleaning section (10) of this rule. Spray-on materials used to insulate or fireproof buildings, structures, pipes, and conduits shall contain less than one (1%) percent asbestos on a dry weight basis. In the case of any city

or area of local jurisdiction having ordinances or regulations for spray application materials more stringent than those in this section, the provisions of such ordinances or regulations shall apply.

(b) Twenty days before any person ~~intending to~~ sprays asbestos materials to insulate or fireproof buildings, structures, pipes, conduits, equipment, or machinery shall ~~report~~ notify ~~such intention to~~ the Department in writing before ~~prior to the commencement of~~ the spraying operation begins. ~~Such report~~ The notification shall contain the following: ~~information:~~

(A) Name and address of person intending to conduct the spraying operation.

(B) Address or location of the spraying operation.

(C) The name and address of the owner of the facility being sprayed.

(c) The spray-on application of materials in which the asbestos fibers are encapsulated with a bituminous or resinous binder during spraying and which are not friable after drying is exempted from the requirements of subsections (8)(a) and (b) of this rule.

(9) Options for air cleaning. Rather than meet the no visible emissions requirements of sections (1) and (3) of this rule, owners and operators may elect to use methods specified in section (10) of this rule below.

(10) Air cleaning. All persons electing to use air cleaning methods rather than comply with the no visible emission requirements must meet ~~all provisions of this section~~ meet one of the provisions of (a) through (d) and all of the requirements specified sections (e), (f) and (g) below:

(a) Fabric filter collection devices must be used, except as provided in subsections (b) and (c) of this section. Such devices must be operated at a pressure drop of no more than four ~~(4)~~ inches (10.16 cm) water gauge as measured across the filter fabric. The air flow permeability, as determined by ASTM Method D737-~~69~~ 75, must not exceed 30 ft.³/min./ft.² (~~9~~11 m³/min./m²) for woven fabrics or 35 ft.³/min./ft.² (~~10~~11 m³/min./m²) for felted fabrics with the exception that airflow permeability ~~for~~ of 40 ft.³/min./ft.² (~~12~~13 m³/min./m²) for woven and 45 ft.³/min./ft.² (~~13~~14 m³/min./m²) for felted fabrics shall be allowed for filtering air emissions from asbestos ore dryers. Each square yard ~~(square meter)~~ of felted fabric must weigh at least 14 ounces ~~(396.9 grams)~~ (475 grams per square meter) and be at least one-sixteenth (1/16) inch ~~(1.50 mm)~~ (1.6mm) thick throughout. Any synthetic fabrics used must not contain fill yarn other than that which is spun.

(b) If the use of fabric filters creates a fire or explosion hazard, the Department may authorize the use of wet collectors designed to operate with a unit contacting energy of at least ~~forty~~ ~~(40)~~ inches (101.6 cm) of water gauge pressure.

(c) If High Efficiency Particulate Absolute filters (HEPA) are used to control emissions the certified efficiency shall be at least 99.97 percent for particles 0.3 microns or greater.

~~(e)~~ (d) The Department may authorize the use of filtering equipment other than that described in subsections (10)(a), (b) ~~and~~, or (c) of this rule if such filtering equipment is satisfactorily demonstrated to provide filtering of asbestos material equivalent to that of the described equipment.

~~(d)~~ (e) All air cleaning devices authorized by this section must be properly installed, operated, and maintained. Devices to bypass the air cleaning equipment may be used only during upset and emergency conditions, and then only for such time as is necessary to shut down the operation generating the particulate asbestos material.

~~(e)~~ (f) All persons operating any existing source using air cleaning devices shall, within ~~ninety~~ ~~(90)~~ days of the effective date of these rules, provide the following information to the Department:

(A) A description of the emission control equipment used for each process.

(B) If a fabric is utilized, the following information shall be reported:

(i) The pressure drop across the fabric filter in inches water gauge and the airflow permeability in $\text{ft}^3/\text{min.}/\text{ft}^2$ ($\text{m}^3/\text{min.}/\text{m}^2$).

(ii) For woven fabrics, indicate whether the fill yarn is spun or not spun.

(iii) For felted fabrics, the density in ounces/yard³ (gms/m^3) and the minimum thickness in inches (centimeters).

(C) If a wet collector is used the unit contact energy shall be reported in inches of pressure, water gauge.

~~(B)-All-reported-information-shall-accompany-the-information-required-in-paragraph-340-25-460(8)(a)(E)-.~~

(g) For fabric filters collection devices installed after January 10, 1989, provide for easy inspection for faulty bags.

(11) Fabricating. No person shall cause to be discharged into the atmosphere any visible emissions including fugitive emissions, except as provided in Air Cleaning section (10) of this rule, from any fabricating operations including the following: ~~{if they use commercial asbestos or, from any building or structure in which such operations are conducted.}~~

(a) Applicability. This section applies to the following fabricating operations using commercial asbestos:

~~(a)~~ (A) The fabrication of cement building products.

~~(b)~~ (B) The fabrication of friction products, except those operations that primarily install asbestos friction materials on motor vehicles.

~~(c)~~ (C) The fabrication of cement or silicate board for ventilation hoods; ovens; electrical panels; laboratory furniture; bulkheads, partitions and ceilings for marine construction; and flow control devices for the molten metal industry.

(b) Monitor each potential source of asbestos emissions from any part of the fabricating facility, including air cleaning devices, process equipment for material processing and handling, at least once each day, during daylight hours, for visible emissions to the outside air during periods of operation. The monitoring shall be by visual observation of at least 15 seconds duration per source of emissions.

(c) Inspect each air cleaning device at least once each week for proper operation and for changes that signal the potential for malfunctions, including to the maximum extent possible without dismantling other than opening the device, the presence of tears, holes, and abrasions in filter bags and for dust deposits on the clean side of bags. For air cleaning devices that cannot be inspected on a weekly basis according to this paragraph, submit to the Department, revise as necessary, and implement, a written maintenance plan to include, at a minimum, the following:

(A) Maintenance schedule.

(B) Recordkeeping plan.

(d) Maintain records of the results of visible emission monitoring and air cleaning device inspections using a format approved by the Department which includes the following:

(A) Date and time of each inspection

(B) Presence or absence of visible emissions.

(C) Condition of fabric filters, including presence of any tears, holes, and abrasions.

(D) Presence of dust deposits on clean side of fabric filters.

(E) Brief description of corrective actions taken, including date and time.

(F) Daily hours of operation for each air cleaning device.

(e) Furnish upon request and make available at the affected facility during normal business hours for inspection by the Department, all records required under this section.

(f) Retain a copy of all monitoring and inspection records for at least two years.

(g) Submit a copy of the visible emission monitoring records to the Department quarterly. The quarterly report shall be postmarked by the 30th day following the end of the calendar quarter.

(12) Insulation: Molded insulating materials which are friable and wet-applied insulating materials which are friable after drying, installed after the effective date of these regulations, shall contain no commercial asbestos. The provisions of this section do not apply to insulating materials which are spray applied; such materials are regulated under section (3) of this rule.

(13) Work practices and procedures for packaging, storage, transport, and disposal of asbestos-containing waste material: The owner or operator of any source covered under the provisions of sections (3), (4), (8), ~~for~~ (11), (14), or (15) of this rule or any other source of friable asbestos-containing waste material shall meet the following standards:~~{-}~~

(a) There shall be no visible emissions to the ~~outside-air~~ atmosphere, except as provided in subsection (13) ~~{(f)}~~ (j) of this section, during the collection; processing, including incineration; packaging; transporting; or deposition of any asbestos-containing waste material which is generated by such source.

~~(b) [The interim storage of asbestos-containing waste material shall protect the waste from dispersal into the environment and provide physical security from tampering by unauthorized persons. The interim storage of asbestos-containing waste material is the sole responsibility of the contractor, owner or operator performing the asbestos abatement project.]~~

~~(c) All asbestos-containing waste materials shall be adequately wetted [and stored and transported to an authorized disposal site in leak-tight containers such as two plastic bags each with a minimum of a thickness of 6 mil., or fiber or metal drums.] to ensure that they remain wet until disposed of, then:~~

~~(A) Processed into nonfriable pellets or other shapes; or~~

~~(B) Packaged in leak-tight containers such as two plastic bags each with a minimum thickness of 6 mill., or fiber or metal drum. Containers are to be labeled as follows:~~

~~(i) The name of the waste generator and the location at which the waste was generated; and~~

~~(ii) A warning label that states:~~

DANGER
Contains Asbestos Fibers
Avoid Creating Dust
Cancer and Lung Disease Hazard
Avoid Breathing Airborne
Asbestos Fibers

Alternatively, warning labels specified by 29 CFR 1910.1001 (7/1/88) may be used.

~~(d) All asbestos-containing waste material shall be disposed of at a disposal site authorized by the Department.~~

~~(A) Persons intending to dispose of asbestos-containing waste material shall notify the landfill operator of the type and volume of the waste material and obtain the approval of the landfill operator prior to bringing the waste to the disposal site.~~

~~(B) The waste transporter shall immediately notify the landfill operator upon arrival of the waste at the disposal site. Off-loading of asbestos-containing waste material shall be done under the direction and supervision of the landfill operator.~~

~~(C) Off-loading of asbestos-containing waste material shall occur at the immediate location where the waste is to be buried. The waste burial site shall be selected in an area of minimal work activity that is not subject to future excavation.~~

~~(D) Off-loading of asbestos-containing waste material shall be accomplished in a manner that prevents the leak-tight transfer containers from rupturing and prevents visible emissions to the air.~~

~~(E) Asbestos-containing waste material deposited at a disposal site shall be covered with at least two (2) feet of soil or one (1) foot of soil plus one (1) foot of other waste before compacting equipment runs over it but not later than the end of the operating day.~~

~~(F) Records of disposal at an authorized landfill shall be maintained by the source for a minimum of three (3) years and shall be made available upon request to the Department. For an asbestos abatement project conducted by a contractor licensed~~

~~under OAR 340-33-040, the records shall be retained by the licensed contractor. For any other asbestos abatement project, the records shall be retained by the facility owner.]~~

(c) Where the asbestos-containing materials are not removed from a facility prior to demolition as described in OAR 340-25-465 (6)(e), adequately wet asbestos-containing waste material at all times after demolition and keep wet during handling and loading for transport to a disposal site. Such asbestos-containing waste materials, shall be transported in lined and covered containers for bulk disposal.

~~[(e)-All asbestos-containing waste material shall be sealed into containers labeled with a warning label that states:~~

DANGER
Contains Asbestos-Fibers
Avoid Creating Dust
Cancer and Lung Disease Hazard
Avoid Breathing Airborne
Asbestos-Fibers

~~Alternatively, warning labels specified by the U.S. Environmental Protection Agency under 40 CFR 61.152(b)(1)(iv) (3/10/86) may be used.]~~

(d) The interim storage of asbestos-containing waste material shall protect the waste from dispersal into the environment and provide physical security from tampering by unauthorized persons. The interim storage of asbestos-containing waste material is the sole responsibility of the contractor, owner or operator performing the asbestos abatement project.

~~[(f)-Rather than meet the requirements of this section, an owner or operator may elect to use an alternative storage, transport, or disposal method which has received prior written approval by the Department.]~~

(e) All asbestos-containing waste material shall be deposited as soon as possible by the waste generator at:

(A) A waste disposal site authorized by the Department and operated in accordance with the provisions of OAR 340-25-465(13) and (14); or

(B) A Department approved site that converts asbestos-containing waste material into nonasbestos (asbestos-free) material according to the provisions of 40 CFR 61.155 Standard for Operations that convert asbestos-containing waste material into nonasbestos (asbestos-free) material.

(f) Persons disposing of asbestos-containing waste material shall notify the landfill operator of the type and volume of the waste material and obtain the approval of the landfill operator prior to bringing the waste to the disposal site.

(g) For each waste shipment the following information shall be recorded on a Department form:

(A) Waste Generation

(i) The name, address, and telephone number of the waste generator.

(ii) The number and type of asbestos-containing waste material containers and volume in cubic yards.

(iii) A certification that the contents of this consignment are carefully and accurately described by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highways according to applicable regulations.

(B) Waste Transportation

(i) The date transported.

(ii) The name, address, and telephone number of the transporter(s).

(C) Waste Disposal

(i) The name and telephone number of the disposal site operator.

(ii) The name and address or location of the waste disposal site.

(iii) The quantity of the asbestos-containing waste material in cubic yards.

(iv) The presence of improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in leak-tight containers.

(v) The date asbestos-containing waste is received at disposal site.

(h) For the transportation of asbestos-containing waste material:

(A) The waste generator shall:

(i) Maintain the waste shipment records and ensure that all the information requested on the Department form regarding waste generation and transportation has been supplied.

(ii) Limit access into loading and unloading area to authorized personnel.

(iii) Mark vehicles, while loading and unloading asbestos-containing waste, with signs (20 in. x 14 in.) that state:

DANGER
ASBESTOS DUST HAZARD
CANCER AND LUNG DISEASE HAZARD
Authorized Personnel Only

Alternatively, language that conforms to the requirements of 29 CFR 1910.1001 (7/1/88) may be used.

(B) The waste transporter shall:

(i) Immediately notify the landfill operator upon arrival of the waste at the disposal site.

(ii) Provide a copy of the waste shipment record to the disposal site owners or operators when the asbestos-containing waste material is delivered to the disposal site.

(i) After initial transport of asbestos-containing waste material the waste generator shall:

(A) Receive a copy of the completed waste shipment record within 35 days, or determine the status of the waste shipment. A completed waste shipment record will include the signature of the owner or operator of the designated disposal site.

(B) Have a copy of the completed waste shipment record within 45 days, or submit to the Department a written report including:

(i) A copy of the waste shipment record for which a confirmation of delivery was not received, and

(ii) A cover letter signed by the waste generator explaining the efforts taken to locate the asbestos waste shipment and the results of those efforts.

(C) Keep waste shipment records, including a copy signed by the owner or operator of the designated waste disposal site, for at least three years. Make all disposal records available upon request to the Department. For an asbestos abatement project conducted by a contractor licensed under OAR 340-33-040, the records shall be retained by the licensed contractor. For any other asbestos abatement project, the records shall be retained by the facility owner.

(j) Rather than meet the requirements of this section, an owner or operator may elect to use an alternative storage, transport, or disposal method which has received prior written approval by the Department.

(14) ~~{Any waste which contains nonfriable asbestos-containing material and which is not subject to subsection (13) of this rule shall be handled and disposed of using methods that will prevent the release of airborne asbestos-containing material.}~~ Work practices and procedures for the active asbestos-containing waste material disposal sites: Each owner or operator of an active asbestos-containing waste disposal site shall meet the following standards:

(a) For all asbestos-containing waste material received:

(A) Ensure that off-loading of asbestos-containing waste material is done under the direction and supervision of the landfill operator or their authorized agent and accomplished in a manner that prevents the leak-tight transfer containers from rupturing and prevents visible emissions to the air.

(B) Ensure that off-loading of asbestos-containing waste material occurs at the immediate location where the waste is to be buried.

(C) Maintain waste shipment records and ensure that all information requested on the Department form regarding waste disposal has been supplied.

(D) Retain a copy of waste shipment records for at least three years.

(E) Immediately notify the Department by telephone, followed by a written report to the Department the following working day, of the presence of improperly enclosed or uncovered waste. Submit a copy of the waste shipment record along with the report.

(F) As soon as possible and no longer than 30 days after receipt of the waste send a copy of the signed waste shipment record to the waste generator.

(G) Upon discovering a discrepancy between the quantity of waste designated on the waste shipment records and the quantity actually received, attempt to reconcile the discrepancy with the waste generator. Report in writing to the Department within the 15th day after receiving the waste any discrepancy between the quantity of waste designated on the waste shipment records and the quantity actually received which cannot be reconciled between the waste generator and the waste disposal site. Describe the discrepancy and attempts to reconcile it, and submit a copy of the

waste shipment record along with the report. Identify the Department assigned asbestos project number in the discrepancy report.

(H) Select the waste burial site in an area of minimal work activity that is not subject to future excavation except as provided in subsection (c)(D) below.

(I) Cover all asbestos-containing waste material deposited at the disposal site with at least 12 inches of soil or six inches of soil plus 12 inches of other waste before compacting equipment runs over it but not later than the end of the operating day.

(b) Maintain, until closure, record of the location, depth and area, and quantity in cubic yards of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area.

(c) Excavation or disturbance of asbestos-containing waste material, that has been deposited at a waste disposal site and is covered, shall be considered an asbestos abatement project. The notification for any such project shall be submitted as specified in OAR 340-25-465(5) but modified as follows:

(A) Submit the project notification and project notification fee to the Department at least 45 days before beginning any excavation or disturbance of asbestos-containing waste disposal site.

(B) Reason for disturbing the waste.

(C) Procedures to be used to control emissions during the excavation, storage, transport and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the Department may require changes in the emission control procedures to be used.

(D) Location of any temporary storage site and the final disposal site.

(d) Upon closure of an active asbestos-containing waste disposal site each owner or operator shall:

(A) Comply with all the provisions for inactive asbestos-containing waste disposal sites.

(B) Submit to the department a copy of records of asbestos waste disposal locations and quantities.

(C) Furnish upon request, and make available during normal business hours for inspection by the Department, all records required under this section.

(15) ~~{Open-storage-or-accumulation-of-friable-asbestos material-or-asbestos-containing-waste-material-is-prohibited.}~~ Work practices and procedures for inactive asbestos-containing waste disposal sites: The owner or operator of an inactive asbestos-containing waste disposal site shall meet the following standards:

(a) Insure that a cover of at least two feet of soil or one foot of soil plus one foot of other waste be maintained.

(b) Grow and maintain a cover of vegetation on the area to prevent erosion of the non asbestos-containing cover of soil or other waste materials or in desert areas where vegetation would be difficult to maintain a layer of at least three inches of well-graded, nonasbestos crushed rock may be placed and maintained on top of the final cover instead of vegetation.

(c) For inactive waste disposal sites for asbestos-containing tailings, a resinous or petroleum-based dust suppression agent that effectively binds dust to control surface air emissions may be used and maintained to achieve the requirements of (a) and (b), provided prior written approval of the Department is obtained.

(d) Excavation or disturbance at any inactive asbestos-containing waste disposal site shall be considered an asbestos abatement project. The notification for any such project shall be submitted as specified in OAR 340-25-465(5), but modified as follows:

(A) Submit the project notification and project notification fee to the Department at least 45 days before beginning any excavation or disturbance of asbestos-containing waste disposal site.

(B) Reason for disturbing the waste.

(C) Procedures to be used to control emissions during the excavation, storage, transport and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the Department may require changes in the emission control procedures to be used.

(D) Location of any temporary storage site and the final disposal site.

(e) Within 60 days of a site becoming inactive record, in accordance with Oregon state law, a notation on the deed to the facility property and on any other instrument that would normally be examined during a title search; this notation will in perpetuity notify any potential purchaser of the property that:

(A) The land has been used for the disposal of asbestos-containing waste material;

(B) The survey plot and record of the location and quantity of asbestos-containing waste disposed of within the disposal site required for active asbestos disposal sites have been filed with the Department; and

(C) The site is subject to OAR 340-25-465.

(16) Any waste which contains nonfriable asbestos-containing material and which is not subject to subsection (13) and (14) of this rule shall be handled and disposed of using methods that will prevent the release of airborne asbestos-containing material.

(17) Open storage of friable asbestos-containing material or asbestos-containing waste material is prohibited.

(18) Open accumulation of friable asbestos-containing material or asbestos-containing waste material is prohibited.

Stat. Auth.: ORS Ch. 468

Hist: DEQ 96, f. 9-2-75; DEQ 22-1982, f. & ef. 10-21-82

**OREGON ADMINISTRATIVE RULES
DEPARTMENT OF ENVIRONMENTAL QUALITY
CHAPTER 340 DIVISION 33
ASBESTOS CERTIFICATION REQUIREMENTS**

ASBESTOS REQUIREMENTS

340-33-010 AUTHORITY, PURPOSE, & SCOPE (1) Authority. These rules are promulgated in accordance with and under the authority of ORS 468.893.

(2) Purpose. The purpose of these rules is to provide reasonable standards for:

(a) training and licensing of asbestos abatement project contractors,

(b) training and certification of asbestos abatement project supervisors and workers,

(c) accreditation of providers of training of asbestos contractors, supervisors, and workers,

(d) administration and enforcement of these rules by the Department.

(3) Scope

(a) OAR 340-33-000 through -100 is applicable to all work, including demolition, renovation, repair, construction, or maintenance activity of any public or private facility that involves the repair, enclosure, encapsulation, removal, salvage, handling, or disposal of any material which could potentially release asbestos fibers into the air; except as provided in (b) and (c) below.

(b) OAR 340-33-000 through -100 do not apply to an asbestos abatement project which is exempt from OAR 340-25-465(4).

(c) OAR 340-33-010 through -100 do not apply to persons performing vehicle brake and clutch maintenance or repair.

(d) Full-scale asbestos abatement projects are differentiated from smaller projects. Small-scale asbestos abatement projects as defined by OAR 340-33-020(17)

(A) where the primary intent is to disturb the asbestos-containing material and prescribed work practices are used, and

(B) where the primary intent is not to disturb the asbestos-containing material.

(e) OAR 340-33-000 through -100 provide training, licensing, and certification standards for implementation of OAR 340-25-465, Emission Standards and Procedural Requirements for Asbestos.

DEFINITIONS

340-33-020 As used in these rules, (1) "Accredited" means a provider of asbestos abatement training courses is authorized by the Department to offer training courses that satisfy requirements for contractor licensing and worker training.

(2) "Agent" means an individual who works on an asbestos abatement project for a contractor but is not an employe of the contractor.

(3) "Asbestos" means the asbestiform varieties of serpentine (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite (amosite), anthophyllite, actinolite and tremolite.

(4) "Asbestos abatement project" means any demolition, renovation, repair, construction or maintenance activity of any public or private facility that involves the repair, enclosure, encapsulation, removal, salvage, handling or disposal of any asbestos-containing material with the potential of releasing asbestos fibers from asbestos containing material into the air.

Note: Emergency fire fighting is not an asbestos abatement project.

(5) "Asbestos-containing material" means any material containing more than one percent asbestos by weight, including particulate asbestos material.

(6) "Certified" means a worker has met the Department's training, experience, and/or quality control requirements and has a current certification card.

(7) "Contractor" means a person that undertakes for compensation an asbestos abatement project for another person. As used in this subsection, "compensation" means wages, salaries, commissions and any other form of remuneration paid to a person for personal services.

(8) "Commission" means the Environmental Quality Commission.

(9) "Department" means the Department of Environmental Quality.

(10) "Director" means the Director of the Department of Environmental Quality.

(11) "EPA" means the United States Environmental Protection Agency.

(12) "Facility" means all or part of any public or private building, structure, installation, equipment, or vehicle or vessel, including but not limited to ships.

(13) "Friable asbestos material" means any asbestos-containing material that hand pressure can crumble, pulverize or reduce to powder when dry.

(14) "Full-scale asbestos abatement project" means any removal, renovation, encapsulation, repair or maintenance of any asbestos-containing material which could potentially release asbestos fibers into the air, and which is not classified as a small-scale project as defined by (17) below.

(15) "Licensed" means a contracting entity has met the Department's training, experience, and/or quality control requirements to offer and perform asbestos abatement projects and has a current asbestos abatement contractor license. For purposes of this definition, a license is not a permit subject to Chapter 340 Division 14.

(16) "Persons" means an individual, public or private corporation, nonprofit corporation, association, firm, partnership, joint venture, business trust, joint stock company, municipal corporation, political subdivision, the state and any agency of the state or any other entity, public or private, however organized.

(17) "Small-scale asbestos abatement project" means small-scale, short-duration projects as defined by (18) below, and/or removal, renovation, encapsulation, repair, or maintenance procedures intended to prevent asbestos containing material from releasing fibers into the air and which:

- (a) Remove, encapsulate, repair or maintain less than 40 linear feet or 80 square feet of asbestos-containing material;
- (b) Do not subdivide an otherwise full-scale asbestos abatement project into smaller sized units in order to avoid the requirements of these rules;
- (c) Utilize all practical worker isolation techniques and other control measures; and
- (d) Do not result in worker exposure to an airborne concentration of asbestos in excess of 0.1 fibers per cubic centimeter of air calculated as an eight (8) hour time weighted average.

(18) "Small-scale, short-duration renovating and maintenance activity" means a task for which the removal of asbestos is not the primary objective of the job, including, but not limited to:

- (a) Removal of small quantities of asbestos-containing insulation on pipes;
- (b) Removal of small quantities of asbestos-containing insulation on beams or above ceilings;
- (c) Replacement of an asbestos-containing gasket on a valve;
- (d) Installation or removal of a small section of drywall; or
- (e) Installation of electrical conduits through or proximate to asbestos-containing materials.

Small-scale, activities shall be limited to no more than 40 linear feet or 80 square feet of asbestos containing material. An asbestos abatement activity that would otherwise qualify as a full-scale abatement project shall not be subdivided into smaller units in order to avoid the requirements of these rules.

(f) No such activity described above shall result in airborne asbestos concentrations above 0.1 fibers per cubic centimeter of air (calculated as an eight (8) hour time weighted average).

(19) "Trained worker" means a person who has successfully completed specified training and can demonstrate knowledge of the health and safety aspects of working with asbestos.

(20) "Worker" means an employe or agent of a contractor or facility owner or operator.

GENERAL PROVISIONS

340-33-030 (1) Persons engaged in the removal, encapsulation, repair, or enclosure of any asbestos-containing material which has the potential of releasing asbestos fibers into the air must be licensed or certified, unless exempted by OAR 340-33-010(3).

(2) An owner or operator of a facility shall not allow any persons other than those employees of the facility owner or operator who are appropriately certified or a licensed asbestos abatement contractor to perform an asbestos abatement project in or on that facility. Facility owners and operators are not required to be licensed to perform asbestos abatement projects in or on their own facilities.

(3) Any contractor engaged in a full-scale asbestos abatement project must be licensed by the Department under the provisions of OAR 340-33-040.

(4) Any person acting as the supervisor of any full-scale asbestos abatement project must be certified by the Department as a Supervisor for Full-Scale Asbestos Abatement under the provisions of OAR 340-33-050.

(5) Any worker engaged in or working on any full-scale asbestos abatement project must be certified by the Department as a Worker for Full-Scale Asbestos Abatement under the provisions of OAR 340-33-050, or as a Supervisor for Full-Scale Asbestos Abatement.

(6) Any contractor or worker engaged in any small-scale asbestos abatement project but not licensed or certified to perform full-scale asbestos abatement projects, must be licensed or certified by the Department as a Small-Scale Asbestos Abatement Contractor or a Worker for Small-Scale Asbestos Abatement, respectively under the provisions of OAR 340-33-040 and -050.

(7) Any provider of training which is intended to satisfy the licensing and certification training requirements of these rules must be accredited by the Department under the provisions of OAR 340-33-060.

(8) Any person licensed, certified, or accredited by the Department under the provisions of these rules shall comply with the appropriate provisions of OAR 340-25-465 and OAR 340-33-000 through -100 and maintain a current address on file with the Department, or be subject to suspension or revocation of license, or certification, or accreditation.

(9) The Department may accept evidence of violations of these rules from representatives of other federal, state, or local agencies.

(10) A regional air pollution authority which has been delegated authority under OAR 340-25-460(7) may inspect for and enforce against violations of licensing and certification regulations. A regional air pollution authority may not approve, deny, suspend or revoke a training provider accreditation, contractor license, or worker certification, but may refer violations to the Department and recommend denials, suspensions, or revocations.

(11) Any person who conducts an asbestos abatement project shall insure accessibility for the Department to perform inspections.

CONTRACTOR LICENSING

340-33-040 (1) Contractors may be licensed to perform either of the following categories of asbestos abatement projects:

(a) Full-Scale Asbestos Abatement Contractors: All asbestos abatement projects, regardless of project size or duration, or

(b) Small-Scale Asbestos Abatement Contractor: Small-scale asbestos abatement projects.

(2) Application for licenses shall be submitted on forms prescribed by the Department and shall be accompanied by:

(a) Documentation that the contractor, or contractor's employee representative, is certified at the appropriate level by the Department:

(A) Full-scale Asbestos Abatement Contractor license: Certified Supervisor for Full-Scale Asbestos Abatement.

(B) Small-Scale Asbestos Abatement Contractor: Certified Worker for Small-Scale Asbestos Abatement.

(b) Certification that the contractor has read and understands the applicable Oregon and federal rules and regulations on asbestos abatement and agrees to comply with the rules and regulations.

(c) A list of all certificates or licenses, issued to the contractor by any other jurisdiction, that have been suspended or revoked during the past one (1) year, and a list of any asbestos-related enforcement actions taken against the contractor during the past one (1) year.

(d) List any additional project supervisors for full-scale projects and their certification numbers as Supervisors for Full-Scale Asbestos Abatement.

(e) Summary of asbestos abatement projects conducted by the contractor during the past 12 months.

(f) A license application fee.

(3) The Department will review the application for completeness. If the application is incomplete, the Department shall notify the applicant in writing of the deficiencies.

(4) The Department shall deny, in writing, a license to a contractor who has not satisfied the license application requirements.

(5) The Department shall issue a license to the applicant after the license is approved.

(6) The Department shall grant a license for a period of 12 months. Licenses may be extended during Department review of a renewal application.

(7) Renewals:

(a) License renewals must be applied for in the same manner as is required for an initial license.

(b) For renewal, the contractor or employee representative must have completed at least the appropriate annual refresher course.

(c) The complete renewal application shall be submitted no later than 60 days prior to the expiration date.

(8) The Department may suspend or revoke a license if the licensee:

(a) Fraudulently obtains or attempts to obtain a license.

(b) Fails at any time to satisfy the qualifications for a license or comply with the rules adopted by the Commission.

(c) Fails to meet any applicable state or federal standard relating to asbestos abatement.

(d) Permits an untrained or uncertified worker to work on an asbestos abatement project.

(e) Employs a worker who fails to comply with applicable state or federal rules or regulations relating to asbestos abatement.

(9) A contractor who has a license revoked may reapply for a license after demonstrating to the Department that the cause of the revocation has been resolved.

CERTIFICATION

340-33-050 (1) Workers on asbestos abatement projects shall be certified at one or more of the following levels:

- (a) Certified Supervisor for Full-Scale Asbestos Abatement.
 - (b) Certified Worker for Full-Scale Asbestos Abatement.
 - (c) Certified Worker for Small-Scale Asbestos Abatement.
- (2) Application for Certification-General Requirements.

(a) Applications shall be submitted to the provider of the accredited training course within thirty (30) days of completion of the course.

(b) Applications shall be submitted on forms prescribed by the Department and shall be accompanied by the certification fee.

(3) Application to be a Certified Supervisor for Full-Scale Asbestos Abatement shall include:

(a) Documentation that the applicant has successfully completed the Supervisor for Full-Scale Asbestos Abatement level training and examination as specified in OAR 340-33-070 and the Department guidance document, and

(b) Documentation that the applicant has been certified as a Worker for Full-Scale Asbestos Abatement and has at least three months of full-scale asbestos abatement experience, including time on powered air purifying respirators and experience on at least five separate asbestos abatement projects; or certified as worker for Full-Scale asbestos abatement and six (6) months of general construction, environmental or maintenance supervisory experience demonstrating skills to independently plan, organize and direct personnel in conducting an asbestos abatement project. The Department shall have the authority to determine if any applicant's experience satisfies those requirements.

(4) Application to be a Certified Worker for Asbestos Abatement shall include:

(a) Documentation that the applicant to be a Certified Worker for Full-Scale Asbestos Abatement has successfully completed the Worker for Full-Scale Asbestos Abatement level training and examination as specified in OAR 340-33-070 and the Department guidance document.

(b) Documentation that the applicant to be a Certified Worker for Small-Scale Asbestos Abatement has successfully completed the Worker for Small-Scale Asbestos Abatement level training and examination as specified in OAR 340-33-070 and the Department guidance document.

(5) Training course providers shall issue certification to an applicant who has fulfilled the requirements of certification.

(6) Certification at all levels is valid for a period of twenty-four (24) months after the date of issue.

(7) Renewals

(a) Certification renewals must be applied for in the same manner as application for original certification.

(b) To gain renewal of certification, a Worker for Full-Scale Asbestos Abatement and a Supervisor for Full-Scale Asbestos Abatement must complete the appropriate annual refresher course no sooner than nine (9) months and no later than twelve (12) months after the issuance date of the certificate, and again no sooner than three (3) months prior to the expiration date of the certificate. A worker may apply in writing to the Department for taking refresher training at some other time than as specified by this paragraph for reasons of work requirements or hardship. The Department shall accept or reject the application in writing.

(c) To gain renewal of certification, a Worker for Small-Scale Asbestos Abatement must comply with the regulations on refresher training which are in effect at the time of renewal. Completion of an accredited asbestos abatement review class may be required if the Environmental Quality Commission determines that there is a need to update the workers' training in order to meet new or changed conditions.

(8) The Department may suspend or revoke a worker's certificate for failure to comply with any state or federal asbestos abatement rule or regulation.

(9) If a certification is revoked, the worker may reapply for another initial certification only after 12 months from the revocation date.

(10) A current worker certification card shall be readily available for inspection by the Department at each asbestos abatement project site for each worker conducting asbestos abatement activities on the site.

TRAINING PROVIDER ACCREDITATION

340-33-060 (1) General

(a) Asbestos training courses required for licensing or certification under these rules may be provided by any person.

(b) Any training provider offering training in Oregon to satisfy these certification and licensing requirements must be accredited by the Department.

(c) Each of the different training courses which are to be used to fulfill training requirements shall be individually accredited by the Department.

(d) The training provider must satisfactorily demonstrate through application and submission of course agenda, faculty resumes, training manuals, examination materials, equipment inventory, and performance during on-site course audits by Department representatives that the provider meets the minimum requirements established by the Department.

(e) The training course sponsor shall limit each class to a maximum of thirty participants unless granted an exception in writing by the Department. The student to instructor ratio for hands-on training shall be equal to or less than ten to one (10:1). To apply for an exception allowing class size to exceed 30, the course sponsor must submit the following information in writing to the Department for evaluation and approval prior to expanding the class size.

(A) The new class size limit,

(B) The teaching methods and techniques for training the proposed larger class,

(C) The protocol for conducting the written examination, and

(D) Justification for a larger class size.

(f) Course instructors must have academic credentials, demonstrated knowledge, prior training, or field experience in their respective training roles.

(g) The Department may require any accredited training provider to use examinations developed by the Department in lieu of the examinations offered by the training provider.

(h) The Department may require accredited training providers to pay a fee equivalent to reasonable travel expenses for one Department representative to audit any accredited course which is not offered in the State of Oregon for compliance with these regulations. This condition shall be an addition to the standard accreditation application fee.

(2) Application for Accreditation.

(a) Application for accreditation shall be submitted to the Department in writing on forms provided by the Department and attachments. Such applications shall, as a minimum, contain the following information:

(A) Name, address, telephone number of the firm, individual(s), or sponsors conducting the course, including the name under which the training provider intends to conduct the training.

(B) The type of course(s) for which approval is requested.

(C) A detailed course outline showing topics covered and the amount of time given to each topic, including the hands-on skill training.

(D) A copy of the course manual, including all printed material to be distributed in the course.

(E) A description of teaching methods to be employed, including description of audio-visual materials to be used. The Department may, at its discretion, request that copies of the materials be provided for review. Any audio-visual materials provided to the Department will be returned to the applicant.

(F) A description of the hands-on facility to be utilized including protocol for instruction, number of students to be accommodated, the number of instructors, and the amount of time for hands-on skill training.

(G) A description of the equipment that will be used during both classroom lectures and hands-on training.

(H) A list of all personnel involved in course preparation and presentation and a description of the background, special training and qualification of each, as well as the subject matter covered by each.

(I) A copy of each written examination to be given including the scoring methodology to be used in grading the examination; and a detailed statement about the development and validation of the examination.

(J) A list of the tuition or other fees required.

(K) A sample of the certificate of completion and certification card label.

(L) A description of the procedures and policies for re-examination of students who do not successfully complete the training course examination.

(M) A list of any states or accrediting systems that approve the training course.

(N) A description of student evaluation methods (other than written examination to be used) associated with the hands-on skill training, as applicable.

(O) A description of course evaluation methods used by students.

(P) Any restriction on attendance such as class size, language, affiliation, and/or target audience of class.

(Q) A description of the procedure for issuing replacement certification cards to workers who were issued a certification card or certification card label by the training provider within the previous 12 months and whose cards have been lost or destroyed.

(R) Any additional information or documentation as may be required by the Department to evaluate the adequacy of the application.

(S) Accreditation application fee.

(b) Application for initial training course accreditation and course materials shall be submitted to the Department at least 45 days prior to the requested approval date.

(c) Upon approval of an initial or refresher asbestos training course, the Department will issue a certificate of accreditation. The certificate is valid for one (1) year from the date of issuance.

(d) Application for renewal of accreditation must follow the procedures described for the initial accreditation. In addition, course instructors must demonstrate that they have maintained proficiency in their instructional specialty and adult training methods during the 12 months prior to renewal.

(3) Denial, Suspension or Revocation of Certificate of Accreditation. The Director may deny, revoke or suspend an application or current accreditation upon finding of sufficient cause. Applicants and certificate holders shall also be advised of the duration of suspension or revocation and any conditions that must be met before certificate reinstatement. Applicants shall have the right to appeal the Director's determination through an administrative hearing in accordance with the provisions of OAR Chapter 340 Division 11. The following may be considered grounds for denial, revocation or suspension:

(a) False statements in the application, omission of required documentation or the omission of information.

(b) Failure to provide or maintain the standards of training required by these regulations.

(c) Failure to provide minimum instruction required by these regulations.

(d) Failure to report to the Department any change in staff or program which substantially deviates from the information contained in the application.

(e) Failure to comply with the administrative tasks and any other requirement of these regulations.

(4) Training Provider Administrative Tasks. Accredited training providers shall perform the following as a condition of accreditation:

(a) Administer the training course examination only to those students who successfully complete the training course.

(b) Issue a numbered certificate to each students who successfully passes the training course examination. Each certificate shall include the name of the student, name of the course completed, the dates of the course and the examination, name of the training provider, a unique certificate number, and a statement that the student passed the examination.

(c) Issue a photo identification card to each student seeking initial or renewal certification who successfully completes the training course examination and meets all other requirements for certification. The photo identification card shall meet the Department specifications.

(d) Place a label on the back of the photo identification card of each student who successfully completes a refresher training course and examination as required to maintain certification. The label shall meet Department specifications.

(e) Provide to the Department within ten (10) calendar days of the conclusion of each course offering the name, address, telephone number, Social Security Number, course title and dates given, attendance record, exam scores, and course evaluation form of each student attending the course and the certification number, certification fee, and a photograph for each student certified. Record of the information shall be retained by the training provider for a period of three (3) years.

(f) Obtain advance approval from the Department for any changes in the course instructional staff, content, training aids used, facility utilized or other matters which would alter the instruction from that described in the approval application.

(g) Utilize and distribute as part of the course information or training aides furnished by the Department.

(h) Provide the Department with a monthly class schedule at least one week before the schedule begins. Notification shall include time and location of each course. Training providers shall notify the Department within three days whenever any unscheduled class is given.

(i) Establish and maintain course records and documents relating to course accreditation application. Accredited training providers shall make records and documents available to the Department upon request. Training providers whose principle place of business is outside of the State of Oregon shall provide a copy of such records or documents within ten (10) business days of receipt of such a written request from the Department.

(h) Notify the Department prior to issuing a replacement certification card.

(i) Accredited training providers must have their current accreditation certificates at the location where they are conducting training.

GENERAL TRAINING STANDARDS

340-33-070 (1) Courses of instruction required for certification shall be specific for each of the certificate categories and shall be in accordance with Department guidelines. The topics or subjects of instruction which a person must receive to meet the training requirements must be presented through a combination of lectures, demonstrations, and hands-on practice.

(2) Courses requiring hands-on training must be presented in an environment suitable to permit participants to have actual experience performing tasks associated with asbestos abatement. Demonstrations not involving individual participation shall not substitute for hands-on training.

(3) Persons seeking certification as a Supervisor for Full-Scale Asbestos Abatement shall successfully complete an accredited training course of at least four days as outlined in the DEQ Asbestos Training Guidance Document. The training course shall include lectures, demonstrations, at least six hours of hands-on training, individual respirator fit testing, course review, and a written examination consisting of multiple choice questions. Successful completion of the training shall be demonstrated by achieving a passing score on the examination, course attendance, and full participation in the hands-on training.

(4) Any person seeking certification as a Worker for Full-Scale Asbestos Abatement shall successfully complete an accredited training course of at least three days duration as outlined in the DEQ Asbestos Training Guidance Document. The training course shall include lectures, demonstrations, at least six hours of actual hands-on training, individual respirator fit testing, course review, and an examination of multiple choice questions. Successful completion of the course shall be demonstrated by achieving a passing score on the examination, course attendance, and full participation in the hands-on training. The course shall adequately address the following topics:

(5) Any person seeking certification as a Worker for Small-Scale Asbestos Abatement shall complete at least a two day approved training course as outlined in the DEQ Asbestos Training Guidance Document. The small-scale asbestos abatement worker course shall include lectures, demonstrations, at least six hours of hands-on training, individual respirator fit testing, course review, and an examination of multiple choice questions. Successful completion of the course shall be demonstrated by achieving a passing score on the examination, course attendance, and full participation in the hands-on training.

(6) Refresher training shall be at least one day duration for Certified Supervisors and Workers for Full-Scale Asbestos Abatement and at least three (3) hours duration for Certified Workers for Small-Scale Asbestos Abatement. The refresher courses shall include a review of key areas of initial training, updates, and an examination of multiple choice questions as outlined in the DEQ Asbestos Training Guidance Document. Successful completion of the course shall be demonstrated by achieving a passing score on the examination, course attendance, and full participation in any hands-on training.

(7) One training day shall consist of at least seven hours of actual classroom instruction and hands-on practice.

PRIOR TRAINING

340-33-080 Successful completion of an initial training course accredited by a governmental agency other than the Department may be used to satisfy the training and examination requirements of OAR 340-33-050 and OAR 340-33-060 provided that all of the following conditions are met.

(1) The Department determines that the course and examination requirements are equivalent to or exceed the requirements of OAR 340-33-050 and 340-33-060 and the asbestos training guidance document, for the level of certification sought. State and local requirements may vary.

(2) For an applicant to qualify for a refresher course and certification, prior training must have occurred within two years of the application to the Department. Applicants must be in good standing in all states where they are certified.

(3) The applicant who has received recognition from the Department for alternate initial training successfully completes an Oregon accredited refresher course and refresher course examination for the level of certification sought.

RECIPROCITY

340-33-090 The Department may develop agreements with other jurisdictions for the purposes of establishing reciprocity in training, licensing, and/or certification if the Department finds that the training, licensing and/or certification standards of the other jurisdiction are at least as stringent as those required by these rules.

FEES

340-33-100 (1) Fees shall be assessed to provide revenues to operate the asbestos control program. Fees are assessed for the following:

- (a) Contractor Licenses
- (b) Worker Certifications
- (c) Training Provider Accreditation
- (d) Asbestos Abatement Project Notifications

(2) Contractors shall pay a non-refundable license application fee of:

(a) \$300 for a one year Full-Scale Asbestos Abatement Contractor license.

(b) \$200 for a one year Small-Scale Asbestos Abatement Contractor license.

(3) Workers shall pay a non-refundable certification fee of:

(a) \$100 for a two year certification as a certified Supervisor for Full-Scale Asbestos Abatement.

(b) \$80 for a two year certification as a Certified Worker for Full-Scale Asbestos Abatement.

(c) \$50 for a two year certification as a Certified Worker for Small-Scale Asbestos Abatement.

(4) Training Providers shall pay a non-refundable accreditation application fee of:

(a) \$1000 for a one year accreditation to provide a course for training supervisors on Full-Scale projects.

(b) \$800 for a one year accreditation to provide a course for training workers on Full-Scale projects.

(c) \$500 for a one year accreditation to provide a course for training workers on Small-Scale projects.

(d) \$250 for a one year accreditation to provide a course for refresher training for any level of certification.

(5) Requests for waiver of fees shall be made in writing to the Director, on a case-by-case basis, and be based upon financial hardship. Applicants for waivers must describe the reason for the request and certify financial hardship. The Director may waive part or all of a fee.

Note: The requirements and jurisdiction of the Department of Insurance and Finance, Accident Prevention Division and any other state agency are not affected by these rules.

(Adopted May 17, 1987; effective January 1, 1989)

ASB\AH12\AH12843
(5/91)

NESHAP AND DEPARTMENT HOUSEKEEPING CHANGES

The EPA has delegated authority to the Department for the implementation of Federal asbestos regulations in Oregon. This agreement requires the Department regulations be at least as stringent as the existing EPA asbestos regulations. These proposed rule changes are necessary in order to maintain the Department's agreement with the EPA.

The Department is also proposing housekeeping changes to the existing rules for clarification.

The proposed NESHAP and Department housekeeping rule changes are discussed below:

Definitions

OAR 340-25-455(1): "Adequately wet". This is a new NESHAP definition that would provide more objective criteria to determine how wet asbestos material must be to prevent asbestos fiber release.

OAR 340-25-455(3): "Asbestos-containing waste material". The Department has added the words mill tailings to this definition to make it as stringent as the NESHAP definition.

OAR 340-25-455(15): "Demolition". The Department has added the words load-supporting and the intentional burning of any facility to make this definition as stringent as the NESHAP definition.

OAR 340-25-455(18): "Fabricating". This is a new NESHAP definition that describes the processing of commercial asbestos used to manufacture an asbestos-containing product. This process includes cutting, sawing, drilling; bonding and de-bonding of friction products, but not temporary sites used for field fabrication.

OAR 340-25-455(21): "Fugitive emissions". This is a new NESHAP definition that describes emissions that escape from a point that is not identifiable as a stack, vent duct or equivalent opening.

OAR 340-25-455(24): "Inactive asbestos waste disposal site". This is a new NESHAP definition that would describe what qualifies as an inactive asbestos waste disposal site.

OAR 340-25-455(30): "Non-friable asbestos-containing material". This is a new NESHAP definition that describes what non-friable asbestos is.

OAR 340-25-455(37): "Roadways". This is a new NESHAP definition that describes roadways as any public and private highway, road, street, parking area, or driveway.

OAR 340-25-455(42): "Waste generator". This is a new NESHAP definition that is necessary to new regulations on transportation, storage, and disposal of asbestos.

OAR 340-35-455(43): "Waste shipment record". This is a new NESHAP definition that is necessary to new regulations on transportation, storage, and disposal of asbestos.

Emission Standards for Asbestos Mills

OAR 340-25-465(1): An addition to this rule would include the words, "including fugitive emissions," and the words, "Each owner or operator of an asbestos mill shall meet the following requirements". This will help clarify what may not be discharged into the atmosphere and give instructions for the owner or operator of a mill site for monitoring. This rule would also require that any asbestos waste produced by an asbestos milling operation is disposed of according to OAR 340-25-465(13) and (14).

OAR 340-25-465(1)(a) through (f) and their subsections: This is a new NESHAP addition to the "Applicability" section that describes the requirements to be met by the owner or operator of an asbestos mill for monitoring each potential source of asbestos emissions. This requirement includes documentation of the condition of air cleaning devices, processing equipment, and buildings that house equipment for asbestos materials processing and handling. This regulation also would require weekly inspections of air cleaning devices and a description of the type of information to be documented from these inspections. The documentation must be available for inspection by the Department and retained for at least 2 years. The rule also would require the owner to submit a quarterly report of any visible emissions that occur during the reporting period.

Standard for Roadways

OAR 340-25-465(2): This addition replaces the existing language for "standards for roadways and parking lots" with new NESHAP language for this standard. The new language clarifies what is a roadway and when it may be maintained using asbestos tailings.

Manufacturing

OAR 340-25-465(3): An addition to this regulation would require all asbestos waste produced by any manufacturing operation to be disposed of according to OAR 340-25-465(13) and (14). Further, the addition of the words, "or from any other fugitive emissions", would help clarify what emissions are prohibited.

OAR 340-25-465(3)(a): This rule change adds, "(a) applicability", then goes on to describe what the section applies to.

OAR 340-25-465(3)(b) through (g): These changes incorporate a system for monitoring and documentation of the condition of air cleaning devices and other equipment used to clean air from an asbestos manufacturing operation. This system requires specific record-keeping procedures and requirements to retain these records for at least 2 years. A manufacturer would also be required to submit a copy of any recorded visible emission to the Department during a quarterly reporting period. There are several other changes that the Department considers necessary for housekeeping purposes and are intended to clarify this rule.

Notification Procedures

OAR 340-25-465(5)(a)(C): This rule allows notification of less than ten (10) days in case of emergency to life, health, or property or where an unexpected event occurs. The Department requires approval prior to commencing such emergencies. The proposed change would add language to the existing rule that requires prior approval by the Department before granting waiver of the ten (10) day notification period. The proposed rule is also restructured to help clarify its intent.

OAR 340-25-465(5)(a)(G): The asbestos regulations require asbestos abatement contractors to supply notifications in four categories of projects that describe the scope of material to be removed. The scope of each project is indicated in the original notification. Revisions to the original notification can accommodate some changes in project size; however, the rules do not contemplate indefinite increases in the amount of asbestos-containing material to be removed. The proposed rule change would define where a large scale project ends and a new project must be started when the scope of the original project is exceeded.

OAR 340-25-465(5)(a)(H): This proposed rule is intended to cover costs associated with processing multiple revisions and inspections associated with asbestos projects that last more than one year. This proposal will not change the current fee schedule, but would require a new notification fee each year for projects that continue for more than one year. Approximately 15% of Department asbestos inspections since June 1, 1988, have been devoted to asbestos abatement projects that continue for more than one year. These projects have required an average of 10 or more extra inspections per job.

OAR 340-25-465(5)(c)(H): Adding the words, "the age, present and prior use of the facility;", would allow the Department to better determine if hazards other than asbestos exist in a facility. This would help inspectors determine the proper safety equipment to use.

OAR 340-25-465(5)(c)(M): This is a new NESHAP change that would require that the name, title, and authority of the State or local government official who ordered a demolition for safety reasons be provided to the Department. This would include the date the order was issued and the date the demolition was to begin.

Work Practice Regulations

OAR 340-25-465(6)(a)(B): This regulation would require that if asbestos materials were not discovered before demolition and could not be removed because of unsafe conditions as a result of the demolition, that they would not need to be removed and could be wetted until disposed of. The Department would be notified immediately in the event of such an occurrence.

OAR 340-25-465(6)(b): This change removes the words, "Adequately wet," and inserts the words, "shall be adequately wetted", for clarification. Also added are the words, "or presents a safety hazard, adequate wetting", to further clarify when wetting may not be required.

OAR 340-25-465(6)(b)(A): In this change we have removed the words, "Demonstrates to the Department that wetting would unavoidably damage equipment", and have inserted the words, "obtains prior written approval from the Department for dry removal of asbestos-containing material", this is to clarify that a person would be required to get permission for a dry removal and that this shall be done prior to doing work.

OAR 340-25-465(6)(b)(B): This new NESHAP rule addition would require that a copy of any approval for dry removal be kept at the job site for inspection.

OAR 340-25-465(6)(c)(C) with (i), (ii), and (iii): This NESHAP rule addition, along with its subsections, would allow certain facility components such and reactor vessels, large tanks, and steam generators to be removed whole as long as they are wrapped and labelled and reused or disposed of without disturbing the asbestos materials on them. This rule specifically excludes structural beams.

OAR 340-25-465(6)(f): This NESHAP change requires all asbestos to be removed from a building or structure prior to burning.

Spraying Operations

OAR 340-25-465(8)(b): The changes in this rule were inserted to clarify that if asbestos is to be sprayed for fireproofing that the Department shall be notified in writing twenty days before the spraying operation is to commence. This rule change is used for the purpose of controlling those spraying operations that use less than 1% asbestos. The spraying of more than 1% asbestos is such operations is prohibited.

Air Cleaning Requirements

OAR 340-25-465(10)(a): The changes in this rule would clarify the proper method to be used for determining air flow permeability. Other changes in this rule serve to simplify the explanation of this method.

OAR 340-25-465(10)(c): This rule addition describes the type of filters to be used for filtering asbestos emissions. The rule also has a requirement for certification of the efficiency of these filters.

General Disposal Work Practice Requirements

OAR 340-25-465(13): With the addition of the words, "and procedures", and the word, "packaging", the Department intends to separate the disposal section into three categories; generation; transport; and disposal. This with other changes required by the NESHAP should make the disposal section of the asbestos rules easier to understand.

OAR 340-25-465(13)(b): The Department has removed the interim storage regulation from this section and moved it to another section.

OAR 340-25-465(13)(c): This rule would become (13)(b). Removing the words, "and stored and transported to an authorized disposal site in leak-tight containers such as two plastic bags each with a minimum of a thickness of 6 mil., or fiber or metal drums", and then adding the word, "adequately", to precede wetted and the words, "to ensure that they remain wet until disposed of, then:", would help clarify that asbestos material must remain wet during all phases of removal and disposal.

OAR 340-25-465(13)(b)(A): This new NESHAP change allows asbestos materials to be processed into non-friable pellets or other shapes.

OAR 340-25-465(13)(b)(B) with (i) and (ii): This new section would contain language previously removed from (13)(c) requiring packaging in leak-tight containers. New NESHAP changes would be incorporated into subsection (i) describing requirements for placing the name of the waste generator, the facility owner, and the location where the waste was generated with the bags and subsection (ii) is an example of the type of warning label required.

OAR 340-25-465(c): This regulations would specify requirements for handling material, including disposal, that was not removed from a structure prior to demolition.

OAR 340-25-465(d): This section would now contain the Department's interim storage regulations.

OAR 340-25-465(e) with subsections (A) and (B): This new NESHAP change would require a waste generator to deposit asbestos-containing waste as soon as possible at a Department authorized asbestos disposal site or a Department approved site that converts asbestos waste into non-asbestos (asbestos-free) material.

OAR 340-25-465(13)(f): This change moves the requirement for notifying the landfill operator of the type and volume of material to be disposed of prior to deposit at an authorized landfill to a new section of the waste disposal rules.

OAR 340-25-465(13)(g) including all its subsections: This section describes the required information on the asbestos waste disposal form for the generator, transporter, and the disposal site.

OAR 340-25-465(13)(h) including all its subsections: This new NESHAP change describes the requirement for the generator to maintain shipment records, limit access to loading and unloading areas, and place required warning signs on vehicles during the loading and unloading process. This section also describes the requirement for the transporter to immediately notify the landfill operator upon arrival and provide a copy of the waste shipment record to the disposal site owners or operators at time of disposal.

OAR 340-25-465(13)(i) and its subsections: This new NESHAP change describes procedures to be used when a copy of the completed waste shipment record is not received by the waste generator within 35 days. This section also describes procedures for reporting to the Department if this information has not been received by 45 days of the initial disposal.

OAR 340-25-465(13)(j): This rule describes the method a person must use to request an alternate method of disposal of asbestos-containing material.
Active waste disposal site

OAR 340-25-465(14)(a) and its subsections: This new NESHAP regulation would require each owner or operator of an active asbestos waste disposal site to:

1. supervise off-loading of asbestos waste;
2. maintain waste shipment records and insure that the information on these records is accurate;
3. immediately inform the Department of improperly enclosed or uncovered waste transported to the landfill;
4. send a copy of the waste shipment record to the waste generator as soon as possible, but no later than 30 days after receipt of the waste;

5. describe procedures to be used when a discrepancy between the quantity of waste designated on the waste shipment record and the quantity of waste received by the disposal site exists;.
6. bury all asbestos waste in an area of minimal activity;
7. cover all asbestos waste with at least six inches of soil plus 12 inches of other waste.

OAR 340-25-465(14)(b): This new NESHAP regulation would require each owner or operator of an active asbestos waste disposal site to maintain, until closure, a record of the location, depth, area, and quantity in cubic yards of any asbestos-containing waste material within the disposal site on a map or diagram of the disposal area.

OAR 340-25-465(14)(c) and its subsections: This new NESHAP regulation would require that excavation or disturbance of asbestos-containing waste material that has been deposited and buried at a waste disposal site be considered an asbestos abatement project. Subsections (A) through (D) describe requirements for notification 45 days in advance of such activity and information need on the notification form.

OAR 340-25-465(14)(d) and its subsections: This new NESHAP change would describe the procedures used by the owner or operator of a waste disposal site to follow when closing the disposal facility.

Inactive Waste Disposal Sites.

OAR 340-25-465(15) and its subsections: This new NESHAP regulation would provide procedures for the owner or operator of an asbestos landfill to use when the site becomes inactive. These procedures include requirements for placing a notation on the comprehensive plan that asbestos is buried on the site, requirements for future excavation, and requirements for maintaining a cover at the site.

Non-Friable Material Disposal

OAR 340-25-465(16): This change relocates the Department's rule describing requirements for disposal of non-friable asbestos-containing material.

Open storage and Open accumulation of asbestos-containing material

OAR 340-25-465(17) and (18): This change relocates the Department's regulation for open storage and accumulation of asbestos containing material and waste. The previous regulation was a combined regulation. By separating this rule into section (17) and section (18) the Department hopes to clarify the intent and purpose.

Licensing and Certification Requirements

Definitions

OAR 340-25-020(15): "Licensed". The Department believes this change to be necessary so there will be no confusion between its license procedure and the requirements for permitting under Division 14.

General Provisions

OAR 340-33-030(11): This change would require contractors to insure that Department inspectors are provided access to all asbestos abatement projects including those in secure facilities.

Certification

OAR 340-33-050(10): The Department proposes to add the word "readily" to this rule to clarify that asbestos worker cards must be easily accessible during an inspection. A policy statement will be issued to all contractors to help clarify the intent of this rule change.

ASB\AH12\AH12835
(5/91)

STATEMENT OF NEED FOR RULEMAKING

Pursuant to ORS 183.335(2), this statement provides information on the intended action to amend rules.

Legal Authority

1. Oregon Revised Statute 468.020 requires the Commission to adopt rules and standards as necessary to perform its vested functions.
2. Oregon Revised Statute 468.893 allows the Commission to establish standards and procedures for asbestos abatement.

Need for the Rule

The proposed amendments are a result of a delegation agreement with the EPA giving the Department authority to administer the Federal NESHAP rules. The Department is also proposing amendments that would fine-tune its existing asbestos regulations.

Principal Documents Relied Upon

1. ORS 468.020, and ORS 468.893
2. OAR 340-25-455 through -465, Hazardous Air Contaminant Rules for Asbestos
3. OAR 340-33-010 et seq., Asbestos Licensing and Certification requirements

Land Use Compatibility Statement

The proposed rule changes do not appear to affect land use, and will be consistent with Statewide Planning Goals and Guidelines.

DEW:a
ASB\AH12\AH12829
(5/91)

FISCAL AND ECONOMIC IMPACT STATEMENTPROPOSAL SUMMARYFISCAL AND ECONOMIC IMPACT

The proposed rules would:

Incorporate new EPA NESHAP changes into existing Department asbestos regulations.

1. These changes include adding new definitions for "adequately wet"; "fabricating"; "fugitive source"; "glove bag"; "inactive disposal site"; "in poor condition"; "nonfriable asbestos-containing material"; "outside air"; "roadways"; "waste generator"; and "waste shipment record".

In addition to the new definitions there are two existing definitions that would involve new language. The "Asbestos-containing waste material" definition would include "mill tailings". The "Demolition" definition would include "load-supporting" and "the intentional burning of any facility".

The Department believes that these changes would help clarify our existing and proposed rules. These new definition additions and changes themselves should have no fiscal or economic impact.

2. An addition to OAR 340-25-465(3) would require all asbestos-containing waste produced by any manufacturing operation to be disposed of according to OAR 340-25-465(13). This change in the disposal requirements may cause a minor to moderate impact on the cost of disposal for these sources if these sources have not already been disposing of asbestos-containing waste material at a Department authorized landfill. This cost could be \$30 to \$50 per yard of material depending on the disposal site chosen.
3. OAR 340-25-465(5)(a)(E) would require a potential fee increase if a "D" category project (2600 linear feet or 1600 square feet or greater) is increased by 25% or more of the original project size. It would then be considered outside the scope of the original project and require a new fee and notification. Depending on the amount of material by which the job is increased, the new fee could be \$200 to \$500 for a new notification, plus the cost of supplying a new notification.

This would prevent contractors and building owners from continuing to add on material as found to existing project notifications, and causing constant changes to the scope of the project. These changes contribute to increases in DEQ costs for tracking notifications and performing inspections.

4. OAR 340-25-465(5)(a)(F) would require submission of a new fee if a project that is 2600 linear feet or 1600 square feet or greater is to last longer than one year. A new notification and fee would be required each year until the project is complete. The Department has performed over 528 inspections since June 1988 when it first began assessing a fee for notifications. Eighty two of these inspections were conducted on projects that lasted one or more years. This amounts to approximately 15% of inspections performed since 1988. Inspection costs are approximately \$60 to \$75 per hour with an average inspection lasting 1½ to 2 hours. The proposed rule amendment would better cover inspection costs and simplify tracking of projects that last more than one year.
5. OAR 340-25-465(5)(c)(H) would require submission of the age and present and prior use of a facility to the Department on a Department form as part of the project notification. This may cause a minor increase in the cost for an owner or operator due to time and resources required to determine new information.
6. OAR 340-25-465(5)(c)(N) would require that State or Local government ordered demolition documents be sent to the Department. This could cause a minor increase in costs to building owners or operators for making a copy of these demolition orders and sending them to the Department.
7. OAR 340-25-465(6)(f) would require that all asbestos-containing material be removed prior to intentionally burning a facility. This could cause a major cost increase to burn a building. Asbestos removal can cost from \$2 to \$15 per square foot and higher. The Department requires notification and fees for all asbestos abatement projects. Depending on the size of the project, fees range between \$25 and \$500. This will affect Fire Departments throughout the State and those people intending to utilize burning as an alternative to demolition. The Department may incur a minor cost for the tracking of notifications and increased inspections for these projects.
8. 340-25-465 (13)(b)(B)(i) would require all asbestos waste bags to be labeled with the name of the waste generator and the location at which the waste was generated. Employee time spent labeling bags could be about one hour at \$10 to \$15 an hour depending on the size of the project. Cost of labels on a project would be approximately \$1 to \$3 per blank label.

9. 340-25-465 (13)(g) would require the waste generator to track the asbestos-containing waste until it is disposed of. A waste shipment form will be provided by the Department. Added administrative costs to waste generators would be approximately \$10 to \$20 for each project.
10. 340-25-465 (13)(g)(A)(iii) would require the waste generator to post signs on the vehicles used to transport asbestos-containing waste material while loading and unloading vehicles. Cost of a new sign would be \$5 to \$15 per sign with 2 to 4 signs needed for each vehicle being loaded. Since waste generators are required by OR-OSHA to use similar signs, some waste generators may experience no cost of compliance.
11. 340-25-465 (13)(i) would require the waste generator to track waste shipment records and take action when any are missing or lost. This rule would also require the waste generator to maintain the waste shipment records for three years. There could be added administrative costs to the waste generator of \$75 to \$100 for tracking down missing records. There may be an increased cost to the Department if on-site inspections are necessary.
12. OAR 340-25-465(14) (a) (C) would require owners or operators of active asbestos-containing waste material disposal sites to maintain and insure accuracy of waste shipment records. A chain of custody form currently covers this requirement and would not be an economic burden, but checking the completeness of information would cause an increase in cost to disposal site operators. Increased cost could be approximately \$20 per shipment to maintain these records.
13. OAR 340-25-465(14) (a) (D) would require owners or operators of active asbestos waste disposal sites to keep waste shipment records for three years. This rule would increase document storage and personnel costs.
14. OAR 340-25-465(14) (a) (E) would require the Department to be notified immediately if an improperly enclosed or uncovered load came in. Disposal sites reject these loads now, but are not required to report them to the Department. This would cause a minor increase in mailing and clerical costs for reporting such incidents. The Department may incur costs when responding to these reports in the form of increased inspections.
15. OAR 340-25-465(14) (a) (F) would require waste sites to send a copy of the waste shipment record to the waste generator. Presently a receipt is given only to the waste hauler. This new regulation would create a minor increase for waste site costs for mailing and clerical work.

16. OAR 340-25-465(14) (a) (G) would require waste sites to reconcile discrepancies between waste shipment records and waste received. Reporting unreconcilable discrepancies to the Department and checking for discrepancies would significantly increase of clerical and mailing costs for waste sites. The average 30 yard dump box load may cost \$75 to \$100 if a problem exists that requires reconciliation. The Department would experience increased costs for responding to these reports by performing additional inspections. However, the Department does not expect these discrepancies to occur regularly.
17. OAR 340-25-465(14) (a) (I) would decrease the amount of cover required daily for waste disposed at waste sites and relieve pressure on soil stockpiles at disposal sites. This could reduce cover and disposal costs at disposal sites.
18. OAR 340-25-465(14) (b) would require maintenance of specific records be kept for the location, depth and area, and quantity of waste within the disposal site on a map or diagram of the disposal area. This may increase clerical and engineering costs at waste sites. The cost could be \$300 to \$400 per year per area used for disposal.
19. OAR 340-25-465(14) (c) (A thru D) requires notification to the Department 45 days in advance of excavating or disturbing buried asbestos-containing waste at disposal sites. This may influence disposal site costs due to delays caused by the increased notification period for asbestos projects at waste sites where excavation is to occur. There could also be an increased cost due notification fees for such projects. The notification fees would range from \$25 to \$500 per project.
20. OAR 340-25-465(14) (d) (A thru C) would require active asbestos disposal sites to submit asbestos disposal records to the Department upon closure. This may cause a minor increase in the cost for closing waste sites.
21. OAR 340-25-465(15) (c) would allow the use of resinous or petroleum-based dust suppression agents at inactive waste disposal sites for asbestos-containing tailings. This may reduce the cost of providing cover in arid areas or where cover soil is at a premium for these types of disposal.
22. OAR 340-25-465(15) (d) (A thru D) would require notification to the Department 45 days in advance of excavating or disturbing buried asbestos-containing waste at inactive asbestos disposal sites. This could increase the cost of maintaining disposal sites after closure due to delays caused by the increased notification period for asbestos projects at waste sites. The notification fees for such projects could range from \$25 to \$500 per project.

24. OAR 340-25-465(15) (e) (A thru C) would require inactive disposal sites to record a notation on the State Comprehensive Land Use Plan that asbestos-containing waste was disposed of at the site. Persons closing a disposal site would also be required to add a survey plot and record of location and quantity, and a notation that the site is subject to OAR 340-25-465. Expenses to accomplish these requirements may include legal, engineering, and clerical costs.

ASB\AH12\AH12830
(5/91)

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

Amendments to Asbestos Regulations
NOTICE OF PUBLIC HEARING

Hearing Date: July 16, 1991
July 17, 1991

Comments Due: July 18, 1991

**WHO IS
AFFECTED:**

All persons removing, transporting, and disposing of asbestos-containing material. All milling and manufacturing sources using asbestos-containing material.

**WHAT IS
PROPOSED:**

The Department of Environmental Quality is proposing to amend OAR 340-25-455; OAR 340-25-465; and OAR 340-33-010 through -100, the Department's asbestos removal, disposal, and training regulations.

**WHAT ARE THE
HIGHLIGHTS:**

Proposed amendments would:

- add new definitions from new NESHAP regulations and Department housekeeping requirements;
- add new NESHAP requirements to the regulations for milling operations, spraying operations, and for air cleaning equipment;
- add new NESHAP and Department changes to the work practice regulations;
- add new NESHAP and Department changes to the disposal regulations;
- add Department changes to the sections for, definitions, general provisions, and certification.

**HOW TO
COMMENT:**

Copies of the complete proposed rule package may be obtained from the Air Quality Division in Portland at 811 SW Sixth Avenue or the regional office nearest you. For further information contact David E. Wall at 229-5364.



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

11/1/86

FOR FURTHER INFORMATION:

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

E-1

Public hearings will be held before a hearings officer at: (Locations to be announced)

Oral and written comments will be accepted at the public hearing. Written comments may be sent to the DEQ, but must be received by no later than July 18, 1991.

**WHAT IS THE
NEXT STEP:**

After public hearing the Environmental Quality Commission may adopt rule amendments identical to the proposed amendments, adopt modified rule amendments on the same subject matter, or decline to act. The Commission's deliberation should come September, 1991, as part of the agenda of a regularly scheduled commission meeting.

A Statement of Need, Fiscal and Economic Impact Statement, and Land Use Consistency Statement are attached to this notice.

ASB\AH12\AH12831
(5/91)

OREGON ASBESTOS ADVISORY BOARD SUMMARY OF COMMENTS

In accordance with Section 15, Chapter 744, Oregon Laws 1987, the Oregon Department of Environmental Quality asbestos staff met with and received comments from the Oregon Asbestos Advisory Board (OAAB) on May 3, 1991, on the proposed asbestos rule changes. After receiving public comments on proposed rule changes, the Department will meet with the OAAB to seek recommendations for adoption. The Advisory Board comments are discussed below.

The comments from the Advisory Board are listed below in the order that they were received:

1. The definition for "inactive waste disposal site" has a clause that states a waste disposal site becomes inactive when asbestos waste has not been accepted for a year or more. The Board suggested that this clause be removed and that it be replaced with a statement that declares an asbestos disposal site to be inactive when its waste disposal permit has ended.
2. The definition for "non-friable asbestos-containing material" states that it must contain 1% or more asbestos by weight. There was discussion that the NESHAP may have changed this to 1% asbestos by area. Department staff will look into this with the EPA. Ken McDonald from the DEQ lab did not feel that 1% by area to be accurate method of determining the percentage of asbestos in a material.
3. The Advisory Board did not feel it necessary to have a definition for "outside air" if it was not going to be used.
4. The definition for "waste generator" describes a person conducting an asbestos abatement project. The Advisory Board suggested that we remove the word, "conducting", and replace it with the word, "performing", for clarification.
5. OAR 340-25-465(5)(a)(C) deals with notification for emergencies that are a threat to life, health, or property. (5)(a)(D) discusses an unexpected event. The Advisory Board suggested that we keep these two areas separate to prevent confusion between the two.

The Board feels we should be more specific about the 10 day waiver. They also feel we should incorporate language from the NESHAP for emergency renovation operation. The Board suggested the use examples to define what an emergency is and what is an unexpected event.

6. The Board suggested adding a phrase to OAR 340-25-465 (6)(a)(B) that describes this activity as an asbestos abatement project. The rule now exempts pre-demolition removal of encased asbestos-containing materials as long as these materials are adequately wetted when they are discovered.
7. The Board suggested a change in OAR 340-25-465(6)(b) that would replace the phrase "unavoidably damage" with "be incompatible with".
8. Marilyn Schuster, Board member from Oregon OSHA, suggested that the Department pass on any copies of asbestos spraying operation notices that are received in relation to OAR 340-25-465(8).
9. The Board suggested that OAR 340-25-465(13)(b)(B)(i) include the name of the building or facility owner. There was general approval for this rule. The Board discussed different types of labelling methods. Bill Candee, an asbestos abatement contractor, said that tagging or labelling would not be a problem as long as the label was not expected to be permanent.

The Department may have some problems with landfill owners on their requirements from the new NESHAP rule. We may be able to combine forms and have a manifest serve as their permit documentation.

10. Dave Butts, Board chairman, brought up the NESHAP change that put non-friable materials into two categories. The Board in general agreed with the Department that the change to two categories of non-friable materials could be confusing to industry. However, Mr. Butts pointed out the possibility that our existing rule may not be as stringent as the new NESHAP rule. Mr. Butts believes that by making a small change to OAR 340-25-465(4)(b) we can bring the existing regulation in line with the NESHAP. The change would remove the word "and" from the second sentence and replace it with "or".

ASB\AH12\AH12833
(5/91)

FIBER RELEASES FROM TWO TYPES OF NONFRIABLE ASBESTOS-CONTAINING MATERIALS: VINYL ASBESTOS TILE AND SHEET VINYL FLOORING

The Department proposes not to incorporate the new NESHP definition for category I and category II non-friable materials into its existing rule. The new NESHP rule exempts certain non-friable asbestos-containing materials (ACM) from removal prior to demolition. These materials would include commonly found vinyl asbestos tile and sheet vinyl flooring. The Department believes it necessary to be more restrictive as to the types of non-friable ACM that may remain in buildings during demolition.

The normal process of demolition is to break up building debris into small portions so they may be hauled away to a landfill. Demolition equipment, usually heavy caterpillars or backhoes, continually run over the debris in order to break it up into small enough pieces for hauling. Department asbestos inspectors have witnessed tile and sheet vinyl being pulverized during the demolition process. Many asbestos-containing flooring materials are in poor condition at the time of demolition, and the process of demolition could cause significant amounts of asbestos fibers to be released into the environment.

The Department's position on non-friable asbestos-containing material is based on the following information:

1. High asbestos fiber counts have been documented during routine floor stripping operations on older worn floors. The floor stripping was done dry and using wet hand stripping methods. This information is significant because it shows that old worn tile will release asbestos fibers during routine maintenance and therefore, would likely release higher concentrations of asbestos during the demolition process where no engineering controls to limit the release of asbestos fibers are used.

A recent report on floor stripping states " Airborne concentrations of asbestos can vary depending on abrasiveness of the buffing pad and surface condition of floor tile. Asbestos concentrations as high as 1.5 f/cc were observed during mechanical stripping and 0.30 f/cc during manual wax stripping operations."¹ The mechanical stripping was done dry using abrasive pads under a buffer. The manual wax stripping was done using a stripping solution.

¹Excerpted from: "Effects of floor maintenance activities on vinyl asbestos floor tile (VAT)" session 19. NAC Summaries Book, New Orleans. By Tim Marxhausen and Stephen Shaffer.

2. High asbestos fiber counts have been detected in asbestos tile removals:

A study was done to evaluate the fiber release potential for vinyl asbestos tile (VAT) removal methods, compare the accuracy of sample analysis techniques for the specific abatement activity of floor tile removal, and to compare the cost of various removal methods.²

The materials tested during the study were nine-inch by nine-inch VAT that contained 20% to 25% chrysotile asbestos. There were five test areas each containing 180 square feet of floor tile.

Analysis for the study consisted of side by side samples using Phase Contrast Microscopy (PCM) and Transmission Electron Microscopy (TEM). Background analysis for each of the test areas showed negligible fiber counts prior to the start of removal activities.

Removal was done in five areas using different methods; dry ice, water-flooding, heating, mechanical chipper, and hand scraping.

The method that was anticipated to create the least amount of asbestos fiber release was dry ice removal. Analysis showed 0.050 f/cc using PCM and 1.29 f/cc using TEM methods.

Review of other removal methods indicate that the mechanical chipper and hand scraping methods produced extremely high fiber counts and broke the material into very small pieces.

Based on the results of this study, the authors offered several recommendations. They suggest that VAT removal projects require at least two workers, full type C personal protective equipment, and a separate technique for removing asbestos-containing mastic or glue. The authors further stated that although VAT is described as non-friable, the amount of fibers generated indicate that a negative-pressure containment area should be used and that great care should be taken in using PCM analytical results for VAT removal.

3. A 1989 study documenting asbestos fiber emissions during floor tile removal lend additional support to the Department's decision to require removal of asbestos-containing floor covering.

..."Studies are available showing elevated fiber levels during VAT removal, and contractors now consider this data when making decisions concerning methods and procedures."

²Excerpted from: "Five Methods for Removing Floor Tiles of Vinyl Asbestos Yield Diverse Data" a study on asbestos floor tile removal from "Occupational Health and Safety", Vol. 58, No. 10, Pages 31, 32 through 35, and 36. September 1989 issue.

..."During most tile and mastic removal projects, contractors seem to be very efficient in keeping fiber counts for personal and area samples at or below 0.1 fibers per cubic centimeters of air (f/cc). However, experience and reported data show that it is often difficult to get transmission electron microscopy (TEM) results below the typical clearance level of 0.01 f/cc, especially when the samples were collected under aggressive clearance techniques. Such TEM clearance sample results are often found as high as 0.1 f/cc. In one case, 3.0 f/cc was reported."

..."John M. Jenkins, an architect with Comprehensive Technical Consultants, Inc., in Atlanta, presented the following conclusions after conducting research on air counts associated with tile removal:

1. A significant amount of asbestos fiber is released during removal of vinyl asbestos tile using conventional tile removal methods.
2. Fiber control methods such as damp removal or isolation of areas by plasticizing, and use of appropriate respirators, should be utilized for tile removal.
3. Areas subjected to contamination by tile removal using uncontrolled methods should be thoroughly cleaned and tested prior to being returned to use."

..." Airborne fiber counts in tile and mastic removal areas are usually below the OSHA excursion level (1.0 f/cc for 30 minutes), the permissible exposure limit (0.2 f/cc for 8 hours), and the action level (0.1 f/cc for 8 hours). However, levels do become elevated above background and clearance concentrations during routine removal and may even exceed one or more of the OSHA limits while using severe removal techniques."³

Information from the recent studies described above shows that high asbestos fiber counts occur during removal of vinyl asbestos tile. Contractors rely heavily on the air sampling data gathered during these types of removal projects to determine what type of safety measures should be used for the protection of their workers. These results indicate that even under well controlled projects, high asbestos fiber releases may occur.

The following study performed by an asbestos consulting firm further demonstrates that asbestos fibers are released from asbestos-containing tile and vinyl sheeting during demolition:

³Excerpted from: "Asbestos Floor Tile Removal" written by William H. Spain, CSP, Nickolas P. Wickware, CSM, and William M. Ewing, Jr., CIH. Asbestos Issues, September 1989.

Hall-Kimbrell Services was retained by a hospital to determine the potential fiber release from vinyl asbestos tile and vinyl sheeting with asbestos paper backing under simulated demolition conditions. The report was prepared to determine the feasibility of leaving certain asbestos-containing materials in place during demolition of the hospital facility.

For this experiment, 3 areas each approximately 5-10 square feet were tested. Each area was isolated in a separate room. The vinyl asbestos tile and sheeting were analyzed for asbestos content utilizing polarized light microscopy (PLM) with dispersion staining techniques, and were found to contain 10% chrysotile and 40% chrysotile asbestos respectively.

..."Analysis was performed using Transmission Electron Microscopy (TEM) according to procedures specified in the AHERA regulations (Federal Register 10, 30, 87; 40 CFR Part 763; EPA "Asbestos Containing Materials in Schools", "Final Rule and Notice.").

..."Sampling during test demolition of vinyl-asbestos tile resulted in airborne asbestos fiber counts approximately 30 times higher than background levels."

..."Sampling during test demolition of vinyl-asbestos sheeting resulted in airborne asbestos fiber counts 150 times higher than background levels."⁴

The results presented in this summary are from two test rooms, 313D and 308, at the facility. All removal was done dry without the aid of water or surfactants.

The test results for removal of vinyl sheeting that contained 40% chrysotile asbestos in the paper backing from room 313D showed .603 f/cc during the 20 minutes that demolition took place. Background results in the same area during a 145 minute sample were <.004 f/cc. A 1500+ liter 160 minute sample taken after demolition showed .084 f/cc.

The test results for removal of vinyl tile that contained 10% chrysotile asbestos from room 308 showed .141 f/cc during the 20 minutes that the demolition took place. Background results in the same room during a 130 minute sample were <.005 f/cc. A 1500+ liter 160 minute sample taken after demolition stopped showed .030

f/cc. This test was done at the anticipated level of destruction for demolition.⁵

⁴Excerpted from: "Air Monitoring and Sample Demolition Tests"; "Executive Summary". Hall-Kimbrell Environmental Services. August 31, 1988.

⁵IBID

Conclusions:

The new NESHAP rule would allow certain types of non-friable ACM to remain in structures during demolition operations. The most common type of non-friable ACM that would remain during demolitions is asbestos-containing resilient floor covering. Contrary to EPA's finding that "these ACM's are not expected to release fibers to the outside air during demolition"⁶, the Department has documented several instances of asbestos fiber release during flooring removal, demolition, and maintenance projects. Because the forces involved with demolition would be at least as great as those employed in the studies relied upon, the Department has chosen to maintain more stringent requirements for demolition. These requirements are more protective of both the health of workers and the public.

DEW:a
ASB\AH12\AH13045
(5/28/91)

⁶Federal Register, Vol. 55, No.224, November 20, 1990, Page 48409.

REQUEST FOR EQC ACTION

Meeting Date: June 14, 1991
Agenda Item: D
Division: Regional Operations
Section: Enforcement

SUBJECT:

Request Authorization for a Public Rulemaking Hearing to Authorize the Enforcement Section Staff to Represent the Department in Contested Case Hearings.

PURPOSE:

EQC authorization is necessary in order for a public rulemaking hearing to be held. Authorization from both the EQC and the Attorney General's Office is necessary before the Enforcement Section staff can represent DEQ in contested case hearings involving civil penalties and/or Department Orders.

ACTION REQUESTED:

- Work Session Discussion
 - General Program Background
 - Potential Strategy, Policy, or Rules
 - Agenda Item for Current Meeting
 - Other: (specify)

- Authorize Rulemaking Hearing
- Adopt Rules

- Proposed Rules
- Rulemaking Statements
- Fiscal and Economic Impact Statement
- Public Notice

- Attachment A
- Attachment B
- Attachment C
- Attachment D

- Issue a Contested Case Order
- Approve a Stipulated Order
- Enter an Order
 - Proposed Order

- Approve Department Recommendation



Attachment
Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696

Meeting Date: June 14, 1991
Agenda Item: D
Page 2

<input type="checkbox"/> Variance Request	Attachment <input type="checkbox"/>
<input type="checkbox"/> Exception to Rule	Attachment <input type="checkbox"/>
<input type="checkbox"/> Informational Report	Attachment <input type="checkbox"/>
<input type="checkbox"/> Other: (specify)	Attachment <input type="checkbox"/>

DESCRIPTION OF REQUESTED ACTION:

Upon EQC approval, a public hearing will be held on July 24, 1991, after notice of the hearing appears in the July 1, 1991, Secretary of State's Bulletin. Rule adoption will be proposed at the September 13, 1991, EQC meeting.

AUTHORITY/NEED FOR ACTION:

<input type="checkbox"/> Required by Statute: _____	Attachment <input type="checkbox"/>
Enactment Date: _____	
<input checked="" type="checkbox"/> Statutory Authority: <u>ORS 183.450(7)</u>	Attachment <u>E</u>
<input type="checkbox"/> Pursuant to Rule: _____	Attachment <input type="checkbox"/>
<input type="checkbox"/> Pursuant to Federal Law/Rule: _____	Attachment <input type="checkbox"/>
<input type="checkbox"/> Other:	Attachment <input type="checkbox"/>
<input type="checkbox"/> Time Constraints: (explain)	

DEVELOPMENTAL BACKGROUND:

<input type="checkbox"/> Advisory Committee Report/Recommendation	Attachment <input type="checkbox"/>
<input type="checkbox"/> Hearing Officer's Report/Recommendations	Attachment <input type="checkbox"/>
<input type="checkbox"/> Response to Testimony/Comments	Attachment <input type="checkbox"/>
<input type="checkbox"/> Prior EQC Agenda Items: (list)	Attachment <input type="checkbox"/>
<input type="checkbox"/> Other Related Reports/Rules/Statutes:	Attachment <input type="checkbox"/>
<input checked="" type="checkbox"/> Supplemental Background Information	Attachment <u>F</u>
Attorney General Letter of Authorization	

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

This proposal for lay representation should have no effect on the regulated community.

PROGRAM CONSIDERATIONS:

The Agency is currently fully represented by the Attorney General's Office in all contested case hearings.

Meeting Date: June 14, 1991
Agenda Item: D
Page 3

ORS 183.450(7) allows an agency to be represented by employees of the agency if the Attorney General consents to the representation and if the agency authorizes the practice through rulemaking.

The Attorney General has consented to Agency lay representation through a letter dated April 29, 1991.

The Enforcement Section is well-equipped to handle lay representation. Currently, three lawyers, a law school graduate and two paralegals are on staff. No additional staff will be needed to effect this change in procedure.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

The Department could maintain the current mode of representation which requires the Attorney General's Office to represent the Department in every contested case hearing, including the simplest of cases such as an open burning violation.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends that the EQC authorize a public hearing about rules which would allow the Department's Enforcement Section staff to represent the Department in contested case hearings involving civil penalties and/or Department Orders. The proposed change will streamline the enforcement process and lower legal fees for contested case hearings while still maintaining proper representation.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

This proposal is consistent with both agency and legislative enforcement policy and furthers goal #8 of the strategic plan which seeks to "(s)treamline agency programs and activities by identifying and implementing more efficient ways to accomplish essential actions...."

ISSUES FOR COMMISSION TO RESOLVE:

Should the Department be represented by its Enforcement Section (lay representation) in contested case hearings involving civil penalties and/or Department Orders?

Meeting Date: June 14, 1991
Agenda Item: D
Page 4

INTENDED FOLLOWUP ACTIONS:

1. Conduct a public rulemaking hearing on July 24, 1991, after notice of the hearing appears in the July 1, 1991, Secretary of State's Bulletin.
2. Propose rule adoption at the September 13, 1991, EQC meeting.

Approved:

Section: Jan A. Kollins
Division: Ed Woods for TRDISPHAM
Director: Jill Hansen

Report Prepared By: Blair Bobier

Phone: 229-5151

Date Prepared: May 28, 1991

bb:b2
layrep.3
5/28/91

Attachment A
Agenda Item D
6/14/91 EQC Meeting
AGENCY REPRESENTATION BY ENFORCEMENT SECTION

340-11-103 (1) The Enforcement Section staff is authorized to appear on behalf of the Department in contested case hearings involving civil penalties and/or Department Orders.

(2) The Enforcement Section staff shall not present legal argument on behalf of the Department in contested case hearings.

(3) "Legal argument" as used in this rule includes argument on:

(a) The jurisdiction of the Department to hear the contested case;

(b) The constitutionality of a statute or rule or the application of a constitutional requirement to the Department; and

(c) The application of court precedent to the facts of the particular contested case proceeding.

(4) "Legal argument" as used in this rule does not include presentation of evidence, examination or cross-examination of witnesses, factual argument or argument on:

(a) The application of the facts to the statutes or rules directly applicable to the issues in the contested case;

(b) Comparisons of prior actions of the Department in handling similar situations;

(c) The literal meaning of the statute or rules directly applicable to the issues in the contested case; or

(d) The admissibility of evidence or the correctness of procedures being followed.

(5) When the Enforcement Section staff is representing the Department in a contested case hearing, the hearings officer shall advise the Department representative of the manner in which objections may be made and matters preserved for appeal. Such advice is of a procedural nature and does not change applicable law on waiver or the duty to make timely objections. Where such objections involve legal argument, the hearings officer shall provide a reasonable opportunity for the Department representative to consult legal counsel and shall permit legal counsel to file written legal argument within a reasonable time after conclusion of the hearing but before final disposition.

Blair Bobier
229-5151
eqc.atA

Attachment B
Agenda Item D
6/14/91 EQC Meeting

STATEMENT OF NEED FOR RULEMAKING

Pursuant to ORS 183.335(1), this statement provides information on the Environmental Quality Commission's action to adopt a rule.

(1) Legal Authority:

ORS 183.450(7)(b) allows the Commission to adopt rules authorizing Agency lay representation.

(2) Need for Rule:

Pursuant to ORS 183.450(7)(b), rule adoption is a prerequisite to lay representation.

(3) Principal Documents Relied Upon:

ORS Chapters 183 and 468. These documents are available for review at the Department of Environmental Quality, Regional Operations, 10th floor, 811 S.W. Sixth Avenue, Portland, OR 97204.

LAND USE CONSISTENCY STATEMENT

The proposed rules do not affect land use as defined in the Department's coordination program approved by the Land Conservation and Development Commission.

Blair Bobier
229-5151
May 28, 1991
eqc.atB

Attachment C
Agenda Item D
6/14/91 EQC Meeting

FISCAL AND ECONOMIC IMPACT STATEMENT

The proposed rules will have no direct, adverse fiscal or economic impact on individuals, public entities or on small or large businesses. The adoption of these rules will neither require the expenditure of funds nor place any additional duties on any group within the regulated community.

By eliminating duplicative and unnecessary efforts by the Attorney General's Office and the Department's Enforcement Section, the proposed rule changes will lower the Departments's legal fees for contested case hearings.

Blair Bobier
229-5151
May 28, 1991
eqc.atC

Attachment D
Agenda Item D
6/14/91 EQC Meeting

**PROPOSED REVISION OF OREGON ADMINISTRATIVE RULES CHAPTER 340,
DIVISION 11, RULES OF PRACTICE AND PROCEDURE**

NOTICE OF PUBLIC HEARING

Date Prepared: May 28, 1991
Hearing Date: July 24, 1991
Comments Due: August 1, 1991

**WHO IS
AFFECTED:**

The Department of Environmental Quality and the
Department of Justice.

**WHAT ARE THE
HIGHLIGHTS:**

1. Proposed State Rule Revisions:

>The Department's Enforcement Section will be able to represent the Department in contested case hearings involving civil penalties and/or Department Orders. The Department is currently fully represented by the Attorney General's Office in these proceedings.

**HOW TO
COMMENT:**

Copies of the complete proposed rule package may be obtained from the Enforcement Section, Regional Operations Division, in Portland (811 S.W. Sixth Avenue, 10th floor) or at any regional office. For further information contact Blair Bobier at 229-5151.

A public hearing will be held before a hearings officer at:

2:00 p.m.
Wednesday, July 24, 1991
DEQ Offices, Tenth Floor, Room 10A
811 S.W. Sixth Avenue, Portland, Oregon

Oral and written comments will be accepted at the public hearing. Written comments may be sent to the DEQ Enforcement Section, 811 S.W. Sixth Avenue, 10th Floor, Portland, OR 97204. Written comments must be received no later than 5:00 p.m., August 1, 1991.

Attachment D
Agenda Item D
6/14/91 EQC Meeting

**WHAT IS THE
NEXT STEP:**

After public hearing, the Environmental Quality Commission may adopt rule amendments identical to the proposed amendments, adopt modified rule amendments on the same subject matter, or decline to act. The Commission's deliberation may come on September 13, 1991, as part of the agenda of the regularly scheduled EQC meeting. A Statement of Need, Fiscal and Economic Impact Statement, and Land Use Consistency Statement are attached to this notice.

Blair Bobier
229-5151
May 28, 1991
eqc.atD

appearance of the witness before such officer.

(2) An agency may, by rule, prescribe other methods of discovery which may be used in proceedings before the agency. [1971 c.734 §14; 1975 c.759 §11; 1979 c.593 §19]

183.430 Hearing on refusal to renew license; exceptions. (1) In the case of any license which must be periodically renewed, where the licensee has made timely application for renewal in accordance with the rules of the agency, such license shall not be deemed to expire, despite any stated expiration date thereon, until the agency concerned has issued a formal order of grant or denial of such renewal. In case an agency proposes to refuse to renew such license, upon demand of the licensee, the agency must grant hearing as provided by ORS 183.310 to 183.550 before issuance of order of refusal to renew. This subsection does not apply to any emergency or temporary permit or license.

(2) In any case where the agency finds a serious danger to the public health or safety and sets forth specific reasons for such findings, the agency may suspend or refuse to renew a license without hearing, but if the licensee demands a hearing within 90 days after the date of notice to the licensee of such suspension or refusal to renew, then a hearing must be granted to the licensee as soon as practicable after such demand, and the agency shall issue an order pursuant to such hearing as required by ORS 183.310 to 183.550 confirming, altering or revoking its earlier order. Such a hearing need not be held where the order of suspension or refusal to renew is accompanied by or is pursuant to, a citation for violation which is subject to judicial determination in any court of this state, and the order by its terms will terminate in case of final judgment in favor of the licensee. [1937 c.717 §8 (3), (4); 1965 c.212 §1; 1971 c.734 §11]

183.435 Period allowed to request hearing for license refusal on grounds other than test or inspection results. When an agency refuses to issue a license required to pursue any commercial activity, trade, occupation or profession if the refusal is based on grounds other than the results of a test or inspection that agency shall grant the person requesting the license 60 days from notification of the refusal to request a hearing. [Formerly 670.235]

183.440 Subpoenas in contested cases.

(1) The agency shall issue subpoenas to any party to a contested case upon request upon a showing of general relevance and reasonable scope of the evidence sought. A party, other than the agency, entitled to have witnesses on behalf of the party may have

subpoenas issued by an attorney of record of the party, subscribed by the signature of the attorney. Witnesses appearing pursuant to subpoena, other than the parties or officers or employees of the agency, shall receive fees and mileage as prescribed by law for witnesses in ORS 44.415 (2).

(2) If any person fails to comply with any subpoena so issued or any party or witness refuses to testify on any matters on which the party or witness may be lawfully interrogated, the judge of the circuit court of any county, on the application of the agency or of a designated representative of the agency or of the party requesting the issuance of or issuing the subpoena, shall compel obedience by proceedings for contempt as in the case of disobedience of the requirements of a subpoena issued from such court or a refusal to testify therein. [1957 c.717 §8 (2); 1971 c.734 §12; 1979 c.593 §20; 1981 c.174 §4; 1989 c.980 §10a]

183.445 Subpoena by attorney of record of party when agency not subject to ORS 183.440. In any proceeding before an agency not subject to ORS 183.440 in which a party, other than the agency, is entitled to have subpoenas issued by the agency for the appearance of witnesses on behalf of the party, a subpoena may be issued by an attorney of record of the party, subscribed by the signature of the attorney. A subpoena issued by an attorney of record may be enforced in the same manner as a subpoena issued by the agency. [1981 c.174 §6]

183.450 Evidence; representation of state agency; representation when public assistance involved. In contested cases:

(1) Irrelevant, immaterial or unduly repetitious evidence shall be excluded but erroneous rulings on evidence shall not preclude agency action on the record unless shown to have substantially prejudiced the rights of a party. All other evidence of a type commonly relied upon by reasonably prudent persons in conduct of their serious affairs shall be admissible. Agencies shall give effect to the rules of privilege recognized by law. Objections to evidentiary offers may be made and shall be noted in the record. Any part of the evidence may be received in written form.

(2) All evidence shall be offered and made a part of the record in the case, and except for matters stipulated to and except as provided in subsection (4) of this section no other factual information or evidence shall be considered in the determination of the case. Documentary evidence may be received in the form of copies or excerpts, or by incorporation by reference. The burden of presenting evidence to support a fact or position in a contested case rests on the proponent of the fact or position.

(3) Every party shall have the right of cross examination of witnesses who testify and shall have the right to submit rebuttal evidence. Persons appearing in a limited party status shall participate in the manner and to the extent prescribed by rule of the agency.

(4) Agencies may take notice of judicially cognizable facts, and they may take official notice of general, technical or scientific facts within their specialized knowledge. Parties shall be notified at any time during the proceeding but in any event prior to the final decision of material officially noticed and they shall be afforded an opportunity to contest the facts so noticed. Agencies may utilize their experience, technical competence and specialized knowledge in the evaluation of the evidence presented to them.

(5) No sanction shall be imposed or order be issued except upon consideration of the whole record or such portions thereof as may be cited by any party, and as supported by, and in accordance with, reliable, probative and substantial evidence.

(6) Agencies may, at their discretion, be represented at hearings by the Attorney General.

(7) Notwithstanding ORS 9.160, 9.320 and ORS chapter 180, and unless otherwise authorized by another law, an agency may be represented at contested case hearings by an officer or employee of the agency if:

(a) The Attorney General has consented to the representation of the agency by an officer or employee in the particular hearing or in the class of hearings that includes the particular hearing; and

(b) The agency, by rule, has authorized an officer or employee to appear on its behalf in the particular type of hearing being conducted.

(8) The agency representative shall not present legal argument in contested case hearings or give legal advice to an agency.

(9) Upon judicial review, no limitation imposed pursuant to subsection (7) of this section on the participation of an officer or employee representing an agency shall be the basis for reversal or remand of agency action unless the limitation resulted in substantial prejudice to a person entitled to judicial review of the agency action.

(10) Notwithstanding any other provision of law, in any contested case hearing before a state agency involving public assistance as defined in ORS 411.010 an applicant or recipient may be represented by an authorized representative who is an employee of a nonprofit legal services program which receives fees pursuant to ORS 21.430 to 21.490

and who is supervised by an attorney also employed by a legal services program. Such representation may include presenting evidence, cross-examining witnesses and presenting factual and legal argument. (1937 c.717 §9; 1971 c.734 §15; 1975 c.739 §12; 1977 c.798 §3; 1979 c.593 §21; 1987 c.333 §1)

183.455 Appearance of person or authorized representative. (1)(a) Notwithstanding ORS 8.690, 9.160, 9.320 and 183.450, and unless otherwise authorized by law, a person participating in a contested case hearing may appear in person, by an attorney, or by an authorized representative subject to the provisions of subsections (2) to (4) of this section.

(b) For the purposes of this section, "authorized representative" means a member of a participating partnership, an authorized officer or employee of a participating corporation, association or organized group, or an authorized officer or employee of a participating governmental authority other than a state agency.

(2) A person participating in a contested case hearing may appear by an authorized representative if:

(a) The State Fire Marshal has determined that appearance of such a person by an authorized representative will not hinder the orderly and timely development of the record in the type of contested case hearing being conducted;

(b) The State Fire Marshal allows, by rule, authorized representatives to appear on behalf of such participants in the type of contested case hearing conducted; and

(c) The officer presiding at the contested case hearing may exercise discretion to limit an authorized representative's presentation of evidence, examination and cross-examination of witnesses, or presentation of factual arguments to insure the orderly and timely development of the hearing record, and shall not allow an authorized representative to present legal arguments.

(3) No provision of this section is intended to require the agency to allow appearance of a person by an authorized representative in a contested case proceeding.

(4) Upon judicial review, no agency denial of permission to appear by an authorized representative, nor any limitation imposed by an agency presiding officer on the participation of an authorized representative, shall be the basis for reversal or remand of agency action unless the denial or limitation clearly resulted in substantial prejudice to development of a complete record at an agency hearing. (1937 c.259 §3)

Attachment F
Agenda Item D
6/14/91 EDC Meeting
DAVE FROHNMAYER
ATTORNEY GENERAL

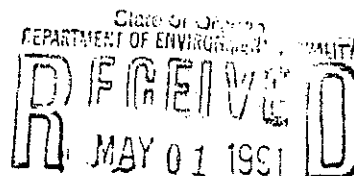


JACK L. LANDAU
DEPUTY ATTORNEY GENERAL

FYI
RO

DEPARTMENT OF JUSTICE

PORTLAND OFFICE
1515 SW 5th Avenue
Suite 410
Portland, Oregon 97201
Telephone: (503) 229-5725
FAX: (503) 229-5120



April 29, 1991

OFFICE OF THE DIRECTOR

Fred Hansen, Director
Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204-1390

Re: Lay Representation in Contested Case Hearings

Dear Mr. Hansen:

The Attorney General has delegated me the authority to consent to lay representation under ORS 183.450(7)(a). Consent is hereby given to your request of April 16, 1991, for officers or employees of your agency to represent the agency in contested case hearings for the assessment of civil penalties under ORS 468.125 to 468.140. Based on your request as I understand it, this consent is limited to your Enforcement Section.


I've been working with the lay representation program for over four years. It has been my experience that some attorneys are puzzled by the statutory and suggested model rule requirements. A brief description of the legislative history usually solves such problems. I'd be pleased to answer any questions you or your staff might have. We currently have asked each of the agencies who have previously been granted consent to use their own representatives in contested case hearings to comment on their experience and give us any suggested changes. Please feel free to do the same if in preparation of making your request you or your staff had some concerns or suggestions.



Fred Hansen, Director
Department of Environmental Quality
April 29, 1991
Page Two

Consent to lay representation of the agency by its officers or employees is subject to revocation if general circumstances change or the circumstances of a particular case require representation of the agency by a Department of Justice attorney in order to protect the legal interests of the State.

Sincerely,


Larry D. Thomson
Assistant Chief Counsel
General Counsel Division

LDT:lyr 6909H

cc: Jack Landau, Deputy Attorney General
Don Arnold, Chief Counsel, General Counsel Division
Michael Huston, AIC, Natural Resources Section ✓

PROPOSED RULE OAR 340-60-130
Charging Additional Fees for Residential Yard Debris
Recycling Services

(See end of Attachment A for text of rules as originally proposed)

New rule OAR 340-60-130.

- (1) The Commission's purpose in adopting this rule governing when a fee may be charged for yard debris recycling services is to:
 - (a) ensure that a financial disincentive for recycling is not created for any waste generator; and to
 - (b) recognize that it may not be equitable to distribute the cost of collection and recycling of yard debris across all waste generators due to the extreme variability in volumes generated.
- (2) The purpose as stated in section 1 of this rule is to apply to those recycling programs required under ORS 459.165 to ORS 459.200 and ORS 459.250.
- (3) As used in this rule, "residential generator" means any generator of recyclable material located in single or multi-family dwellings up to and including 4 units.
- (4) Residential generators of yard debris participating in a regularly scheduled yard debris collection service, where yard debris is a principal recyclable material, may be charged a fee for yard debris recycling. *No fee may be charged for the first set-out per month of up to one unit of yard debris.* ~~This fee may be charged in addition to the base fee for garbage collection only if the volume of yard debris material collected exceeds one unit of yard debris for the collection period. The first unit of yard debris collection shall not be less than the equivalent of a thirty-two gallon can, or the standard unit of yard debris service provided.~~
- (5) Fees for yard debris recycling charged to residential generators of yard debris participating in a regularly scheduled yard debris collection service, where yard debris is a principal recyclable material, shall only be applied to volumes of yard debris in excess of those specified in Section (4) of this rule.
- (6) Persons who have yard debris collection service but do not have solid waste collection service may be charged a fee for

yard debris collection, not to exceed the fee charged for the collection of an equivalent amount of solid waste.

- (7) A yard debris recycling fee in addition to the base fee charged for solid waste collection and disposal may be charged to generators of yard debris participating in yard debris collection programs located at depots where yard debris is a principal recyclable material, and to generators using an on-call collection service in an area where the opportunity to recycle is being provided through a depot program or other similar alternative method. This additional fee can be charged at any yard debris recycling depot including those which are not solid waste disposal site depots.
- (8) The total additional yard debris recycling fee charged to any generator of yard debris for collection of yard debris shall be less than the fee that would have been charged for collection of that same volume of yard debris as mixed solid waste.
- (9) Yard debris recycling fees in addition to the base fee charged for solid waste collection and disposal may be charged for the collection of yard debris on-route or at a depot, where yard debris is not a principal recyclable material.
- (10) These rule is effective through June 1, 1993 at which time the Department shall review the rules and make any recommendations for deletion, changes or continuation of the rules to the Commission.

Proposed Amendment to Reporting Rules
(no change from original proposal)

Standards for Recycling Reports

340-60-045

- (1) The first recycling report shall be submitted to the Department not later than July 1, 1986 on forms supplied by the Department. Subsequent recycling reports shall be submitted to the Department not later than February 15 each year, beginning in 1988, on forms supplied by the Department.
- (2) The recycling report shall include the following information:

- (4) Residential generators of yard debris participating in a regularly scheduled yard debris collection service, where yard debris is a principal recyclable material, may be charged a fee for yard debris recycling. No fee may be charged for the first setout per month of up to a unit of yard debris. [This fee may be charged in addition to the base fee for garbage collection only if the volume of yard debris material collected exceeds one unit of yard debris for the collection period.] The first unit of yard debris collection [shall not be less than] is defined as the equivalent of a thirty-two gallon can, or the standard unit of yard debris service provided, whichever is greater.

REQUEST FOR EQC ACTION

Meeting Date: June 14, 1991
Agenda Item: E
Division: H&SW
Section: SWR&R

SUBJECT:

Adoption of rule amendments relating to charging a fee for yard debris collection.

PURPOSE:

The proposed rule revisions are intended to clarify the intent of Oregon Revised Statute (ORS) 459.190 as it applies to additional fees which can be charged for residential yard debris recycling service. The purpose in drafting the rules is to ensure that a financial disincentive is not created for any waste generator who participates in a residential yard debris collection program. In addition, the Department of Environmental Quality (Department) is proposing two housekeeping amendments to provide for a new method of centralized reporting of recycling data and to enable used oil to be burned for energy recovery.

ACTION REQUESTED:

- Work Session Discussion
 - General Program Background
 - Program Strategy
 - Proposed Policy
 - Potential Rules
- Authorize Rulemaking Hearing
 - Proposed Rules (Draft)
 - Rulemaking Statements
 - Fiscal and Economic Impact Statement
 - Draft Public Notice

Attachment
Attachment
Attachment
Attachment



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696

Meeting Date: June 14, 1991
Agenda Item: E
Page 2

- | | |
|--|------------------------|
| <input checked="" type="checkbox"/> <u>x</u> Adopt Rules | |
| Proposed Rules | Attachment <u>A</u> |
| Rulemaking Statements | Attachment <u>B</u> |
| Fiscal and Economic Impact Statement | Attachment <u>B</u> |
| Public Notice | Attachment <u>C</u> |
| <input type="checkbox"/> Issue Contested Case Decision/Order | |
| Proposed Order | Attachment <u> </u> |
| <input type="checkbox"/> Other: (specify) | |

DESCRIPTION OF REQUESTED ACTION:

The Department is requesting that the Environmental Quality Commission (EQC, Commission) adopt a new rule and two amendments to the existing recycling rules (OAR Chapter 340 Division 60). Each is discussed separately in this section. The first rule regarding charging a fee for residential yard debris recycling is of major importance and the other two are minor rule changes which the Department considers to be housekeeping items.

Charging a fee for yard debris recycling services:

ORS 459.190 allows a person who source separates recyclable material to be charged less, but not more, for collection and disposal of solid waste and collection of recyclable material than they would have been charged for collection and disposal of that same material as solid waste. Generally, this has made it impractical for recycling collectors to charge a fee just to users of a residential recycling collection program. Persons who generate little garbage such that they can subscribe to a minimum garbage service level (usually one 32-gallon can of garbage per week) would end up paying more if they were to source separate their recyclable material and were to be charged a separate recycling fee. This higher total fee (minimum garbage fee plus recycling fee) would violate ORS 459.190.

However, the circumstances surrounding the collection of residential yard debris as a recyclable material were not considered when this language was included in the statute. The Attorney General's office has given the Department advice indicating that the Commission has some ability under the law to consider volume-based rates for this material without violating ORS 459.190 since yard debris collection involves substantial volumes of material which are generated

seasonally and on a sporadic basis. The Department wishes to adopt a rule that would clarify the specific circumstances under which a separate fee could be charged, in addition to a base garbage collection fee, for the collection and recycling of residential yard debris.

The proposed rule addresses on-route residential yard debris collection programs and yard debris recycling depots. The rule does not address fees which might be charged for on-route yard debris collection from commercial establishments or multi-family dwellings. The Department will be looking at the feasibility of allowing a charge for on-route recycling of commercially and multi-family dwelling generated recyclable materials after the legislative session, since legislative requirements for these programs are expected to be changed based on current legislative proposals. Guidance on yard debris charging issues is needed sooner, however, since many jurisdictions in the Metro area are expected to implement yard debris recycling programs in the next few months.

The proposed rule would allow for the following fees where yard debris is a principal recyclable material (currently only the Portland Metro area):

- For regularly-scheduled on-route collection of yard debris, persons who have garbage service shall receive at least one unit of yard debris collection service at no extra charge for each yard debris collection period (quarterly, monthly, weekly etc. depending on the frequency with which yard debris collection is offered).
- The size of the first unit of "free" collection shall be at least 32 gallons in volume.
- A fee may be charged for collection of amounts greater than one unit of service per collection period.
- A fee may be charged for the first unit of yard debris collected on-route from persons who do not subscribe to solid waste collection service;
- A fee may continue to be charged to participants in residential yard debris recycling programs located at depots, and on-call collection programs associated with the depots, for any amount of yard debris recycled at that site.

- Any fee charged to participants in residential yard debris recycling programs shall be less than the fee that would have been charged for collection of that same volume of yard debris as garbage.

The following are two examples of how this fee could be implemented.

- If the garbage rate is \$3.50 per can per week (about \$14.00 per month) for one thirty-two gallon can collected weekly, a person offered monthly yard debris collection who recycles one thirty-two gallon can of yard debris in one month may be charged only the base garbage rate of \$14.00. A person with monthly yard debris collection who recycles two thirty-two gallons cans of yard debris in a month could be charged up to \$17.50: \$14.00 for the base garbage rate and no more than \$3.50 for the second can of yard debris.
- If the disposal fee at a transfer station is \$55.00 per ton of garbage disposed, a person who recycles yard debris at a yard debris recycling depot can be charged no more than \$55.00 per ton for recycling of any amount of yard debris.

This rule is proposed to sunset on June 1, 1993 if the Department does not request that the Commission continue the rule. The Department has included a sunset provision so that the rule can be evaluated after a period of time to determine the effect that charging a fee to participants in yard debris recycling programs has on the operation of those programs.

Reporting Amendments:

OAR 340-60-045(5) presently requires that recycling collectors report directly to the Department on the number of recycling setouts collected from residences during the months of January, April, July and October each year. A "setout" is any amount of material set out in front of a residence for recycling. The Metropolitan Service District (Metro) will also be gathering extensive data on recycling setouts and materials recycled in the Metro area wastesheds. To eliminate double reporting by the collectors, the Department would like to amend this rule to allow Metro area garbage haulers to submit data forms directly to the wasteshed representatives, who would pass them on to Metro for analysis. Metro would then be responsible for forwarding the data to the Department. Although the Department has proposed

this rule revision because of the situation in the Metro area, the rule has been written in general terms to allow any other local government to take advantage of this method of reporting.

Allowing used motor oil to be burned for energy recovery:

OAR 340-60-080 prohibits recyclers from disposing of source separated recyclable material by any means other than reuse and recycling. This means that source separated recyclable material, which includes used oil, cannot be burned for energy recovery. This rule goes beyond the statutory requirements of ORS 459.195, which simply prohibits the disposal of source separated recyclable material through mixing "with solid waste in any vehicle, box, container, or receptacle used in solid waste collection or disposal." A significant amount of the used oil currently collected is being marketed to processors who make fuel oil, and not to those that re-refine the oil to make lubricating oil. Markets for re-refining of used motor oil are located outside of Oregon, Washington, and Idaho. The Department has identified used motor oil as a material which is desirable to keep out of the landfill and is, therefore, proposing that used oil be exempted from this particular rule if the oil is being burned for energy recovery.

AUTHORITY/NEED FOR ACTION:

<input type="checkbox"/> Required by Statute: _____	Attachment _____
Enactment Date: _____	
<input checked="" type="checkbox"/> Statutory Authority: <u>ORS 459.190 to 459.195</u>	Attachment <u>D</u>
<input type="checkbox"/> Amendment of Existing Rule: _____	Attachment _____
<input type="checkbox"/> Implement Delegated Federal Program: _____	Attachment _____
<input type="checkbox"/> Other: _____	Attachment _____
<input type="checkbox"/> Time Constraints: (explain)	

DEVELOPMENTAL BACKGROUND:

<input checked="" type="checkbox"/> Advisory Committee Report/Recommendation	Attachment <u>E</u>
<input checked="" type="checkbox"/> Hearing Officer's Report/Recommendations	Attachment <u>F</u>
<input checked="" type="checkbox"/> Response to Testimony/Comments	Attachment <u>G</u>
<input type="checkbox"/> Prior EQC Agenda Items: (list)	Attachment _____

Meeting Date: June 14, 1991
Agenda Item: E
Page 6

<u> </u> Other Related Reports/Rules/Statutes:	Attachment <u> </u>
<u> x </u> Supplemental Background Information	Attachment <u> H </u>
Attorney General's Letter of Advice	

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

Many local governments in the Metro area will be starting their yard debris recycling programs by July 1991 and have requested guidance on this issue. The Department has reviewed this topic both with the Solid Waste Reduction Advisory Committee and a special work group convened to provide input into the rule making process (see Attachment E). Both groups have agreed on the concept proposed in these rules.

Garbage service collection and disposal rates could increase to help cover the cost of yard debris recycling programs, where yard debris is a principal recyclable material. This increase in the garbage collection and disposal rate would be paid by all generators of garbage and therefore is not unlike the method by which local recycling programs recover the costs of providing recycling collection for other principal recyclable materials. Nevertheless, there may be some residents who do not generate any yard debris or who home-compost their yard debris and who will object to paying for a portion of a program in which they choose not to participate.

The remainder of the cost could be paid by the participants in the program who generate more than one unit of yard debris per collection period or that participate in a yard debris depot recycling program.

The Metro Waste Reduction Subcommittee to the Metro Solid Waste Committee favors a "user-pay" program which would allow any resident who participates in the program to pay an additional fee which covers the cost of the program. This does not meet the requirements of ORS 459.190, in that an economic disincentive to recycling is created for small generators of yard debris.

The Solid Waste Reduction Advisory Committee provided input to the Department on the proposed rules for reporting and allowing used oil to be burned for energy recovery (see Attachment E). The Committee's advice to the Department has been included in the proposed rules.

Testimony was received during public hearing that on-call collection programs offered voluntarily in conjunction with yard debris recycling depots should not be subject to the "one can yard debris at no extra charge" portion of the rules, and that persons who do not have solid waste collection service should be able to be charged for all their yard debris collected (see attachments F and G). The Department agrees, and has modified the proposed rules accordingly.

As originally proposed, the minimum amount of yard debris to be collected at no extra charge was 32 gallons per month. Testimony from the Oregon Sanitary Service Institute (OSSSI) suggested that the first unit (minimum 32 gallons) of yard debris for which there is no charge be per collection period, rather than per month. If a service offers weekly collection, the first 32 gallons of yard debris would be provided at no extra charge each week, rather than 32 gallons each month at no extra charge.

The work group which helped develop the rule discussed this issue at length and decided that the exclusion should be 32 gallons per month rather than per collection period. It was argued that for weekly programs, requiring that one can be collected "for free" each week (4 to 5 cans per month) would be placing too much of the cost in the garbage rate base and not allocating enough of the cost in the individual users of the program.

While the Department understands the work group's concerns, we believe the OSSSI proposal will provide better incentives for participation in the program and that the charging system will be easier for the haulers to administer and for users to understand. The OSSSI proposal has been incorporated into the rule (OAR 340-60-130 (4)).

Regarding rule amendments on reporting requirements and burning used oil for energy recovery, public testimony supported these amendments and there was no opposition or changes to the amendments suggested.

PROGRAM CONSIDERATIONS:

By proposing rules which would allow for a fee to be charged for yard debris recycling, the Department has set a precedent and the same consideration could be requested for other principal recyclable materials or types of recycling services (e.g. commercial collection). The Department reviewed the

Meeting Date: June 14, 1991
Agenda Item: E
Page 8

issue of charging for recycling services and how that could affect existing recycling programs as a work session item at the April 1991 Commission meeting. It was determined that this issue should be further pursued after the legislative session, since proposed legislation on commercial and multi-family dwelling recycling could affect the situation.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

- 1) Adopt the proposed rules.
- 2) Do not adopt the proposed rules.
- 3) Prohibit charging any fee for yard debris recycling regardless of quantity.
- 4) Set a different minimum quantity of yard debris to be included in the base garbage rate for on-route collection, such as the "minican" size can for jurisdictions with minican service.
- 5) Set the first unit (32 gallons minimum) for which there is no charge to be per month (as originally proposed), rather than per collection period.
- 6) Include commercial and multi-family yard debris collection in the proposed rules.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends approval of Alternative 1, adoption of rule revisions to OAR Chapter 340, Division 60 as outlined in this staff report. This recommendation allows the Department to clarify the intent of ORS 459.190 as it pertains to charging for yard debris recycling so that local governments in the Metro area have some guidance as they proceed with their yard debris recycling plans. This recommendation also allows for centralized reporting and allows existing motor oil recycling programs to continue marketing their material to processors who sell into the fuel oil market.

The Department believes that adoption of Alternative 2 (no changes to rules) would result in inconsistent application of ORS 459.190 by local recycling programs with regard to yard debris, duplicative reporting by haulers in the Metro area, and requests from wastesheds to delete motor oil from the

list of principal recyclable materials in certain areas of the state.

Alternative 3 (no charging for yard debris), while providing the strongest incentive considered for recycling yard debris, probably goes beyond the legislative authority of ORS 459.190. Individuals sometimes generate huge piles of yard debris, and there are valid ways to charge for the recycling of that yard debris without violating ORS 459.190.

Alternative 4 (minimum amount of yard debris to be included in the base collection rate) was considered for yard debris collection containers smaller than standard 32 gallon garbage can size. The Department feels that setting the minimum as a minimum for yard debris (in jurisdictions offering minimum service or garbage collection) could discourage individuals from subscribing to minimum garbage service. For jurisdictions standardly providing units larger than 32 gallons for service (such as 60 gallon or 90 gallon toter carts), it was felt that the entire first unit should be included in the garbage rate base, rather than have the awkward situation of collectors and the public having to figure out if there is more than 32 gallons of yard debris in the larger containers.

Alternative 5 (32 gallons per month rather than 32 gallons per collection period) was the proposal originally developed by the Department and the work group. However, OSSI testimony has convinced the Department that allowing one unit of yard debris to be collected at no extra charge each collection period (rather than 32 gallons per month) would be simpler and more understandable to the public, provide better recycling incentives, and be easier for the garbage haulers to administer. Otherwise, haulers offering weekly programs may have to keep running totals each month on how much yard debris each customer recycles, or designate one day per month as "free" day but charge for collection on other days. Either way, the method of charging could be confusing and discourage participation.

The Department intends to investigate issues relating to charging for commercial and multifamily recycling after the current legislative session has been completed, as new legislation is expected to pass that will change the requirements for commercial and multi-family recycling. The Department believes that issues regarding Alternative 6 (commercial and multi-family yard debris collection) would be best addressed at that time.

Meeting Date: June 14, 1991
Agenda Item: E
Page 10

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE
POLICY:

The proposed rule revisions are consistent with the legislative intent of the Recycling Opportunity Act (ORS 459.165 to 459.200).

ISSUES FOR COMMISSION TO RESOLVE:

Should the first unit of yard debris for which there is no charge be per collection period or monthly?

INTENDED FOLLOWUP ACTIONS:

As a result of comments received during the April EQC work session meeting, the Department will be evaluating any further efforts in this area after the end of the 1991 Legislative Session. If the Department decides to proceed with additional rulemaking in this area, a work group will be formed to assist the Department in evaluating the alternatives available and what, if any, broader policy issues need to be addressed.

Approved:

Section:

Nancy Long for Jan Whitworth

Division:

Stephanie Hallock

Director:

Jul H.

Report Prepared By: Peter Spendelow and Lissa West

Phone: 229-5253

Date Prepared: June 3, 1991

(EAW/PHS:eaw/phs)
(eqccharg.D16)
(6/3/91)

PROPOSED RULE OAR 340-60-130
Charging Additional Fees for Residential Yard Debris
Recycling Services

(See end of Attachment A for text of rules as originally proposed)

New rule OAR 340-60-130.

- (1) The Commission's purpose in adopting this rule governing when a fee may be charged for yard debris recycling services is to:
 - (a) ensure that a financial disincentive for recycling is not created for any waste generator; and to
 - (b) recognize that it may not be equitable to distribute the cost of collection and recycling of yard debris across all waste generators due to the extreme variability in volumes generated.
- (2) The purpose as stated in section 1 of this rule is to apply to those recycling programs required under ORS 459.165 to ORS 459.200 and ORS 459.250.
- (3) As used in this rule, "residential generator" means any generator of recyclable material located in single or multi-family dwellings up to and including 4 units.
- (4) Residential generators of yard debris participating in a regularly scheduled yard debris collection service, where yard debris is a principal recyclable material, may be charged a fee for yard debris recycling. This fee may be charged in addition to the base fee for garbage collection only if the volume of yard debris material collected exceeds one unit of yard debris for the collection period. The first unit of yard debris collection shall not be less than the equivalent of a thirty-two gallon can.
- (5) Fees for yard debris recycling charged to residential generators of yard debris participating in a regularly scheduled yard debris collection service, where yard debris is a principal recyclable material, shall only be applied to volumes of yard debris in excess of those specified in Section (4) of this rule.
- (6) Persons who have yard debris collection service but do not have solid waste collection service may be charged a fee for

yard debris collection, not to exceed the fee charged for the collection of an equivalent amount of solid waste.

- (7) A yard debris recycling fee in addition to the base fee charged for solid waste collection and disposal may be charged to generators of yard debris participating in yard debris collection programs located at depots where yard debris is a principal recyclable material, and to generators using an on-call collection service in an area where the opportunity to recycle is being provided through a depot program or other similar alternative method. This additional fee can be charged at any yard debris recycling depot including those which are not solid waste disposal site depots.
- (8) The total additional yard debris recycling fee charged to any generator of yard debris for collection of yard debris shall be less than the fee that would have been charged for collection of that same volume of yard debris as mixed solid waste.
- (9) Yard debris recycling fees in addition to the base fee charged for solid waste collection and disposal may be charged for the collection of yard debris on-route or at a depot, where yard debris is not a principal recyclable material.
- (10) These rule is effective through June 1, 1993 at which time the Department shall review the rules and make any recommendations for deletion, changes or continuation of the rules to the Commission.

Proposed Amendment to Reporting Rules
(no change from original proposal)

Standards for Recycling Reports

340-60-045

- (1) The first recycling report shall be submitted to the Department not later than July 1, 1986 on forms supplied by the Department. Subsequent recycling reports shall be submitted to the Department not later than February 15 each year, beginning in 1988, on forms supplied by the Department.
- (2) The recycling report shall include the following information:

- (a) The materials which are recyclable at each disposal site and within any urbanized area, if there has been a change from the previous year;
 - (b) The manner in which recyclable material is collected or received, if there has been a change from the previous year;
 - (c) Proposed and approved alternative methods for the opportunity to recycle which are to be used in the watershed and justification for the alternative method, if there has been a change from the previous year;
 - (d) Public education and promotion activities in the preceding calendar year;
 - (e) Other information necessary to describe changes from the preceding calendar year in the programs for providing the opportunity to recycle;
 - (f) The amount of material recycled in the preceding calendar year at each disposal site or more convenient location, by type of materials collected;
 - (g) The amount of materials recycled in the previous calendar year by each on-route collection program required by OAR 340-60-020, or by an approved alternative method, by type of materials collected; and
 - (h) If a recycling program required by OAR 340-60-020 collects materials both on-route and at disposal sites or other recycling depots in such a way that it is impractical to separately report the amount of material recycled as required in subsections (2)(f) and (g) of this rule, then the total amount of material recycled and estimates of the amount of material recycled by the on-route collection program and at each disposal site or more convenient location shall be reported.
- (3) The recycling report shall include attachments including but not limited to the following materials related to the opportunity to recycle:
- (a) Copies of materials that are being used in the watershed as part of education and promotion;
 - (b) A copy of any new city or county collection service franchise, or any new amendment to a franchise,

including rates under the franchise; which relates to recycling in areas required by ORS 459.180 and OAR 340-60-020 to provide on-route collection of source separate recyclable materials; and

- (c) Other attachments which demonstrate the programs for providing the opportunity to recycle.
- (4) By January 25th of each year, collectors, disposal site operators, and other persons providing an opportunity to recycle required under ORS 459.180 and OAR 340-60-020 shall gather and report to their wasteshed representative, on forms provided by the Department, the information required by subsections (2f), (2g), and (2h) of this rule, for inclusion in the annual recycling report for the preceding calendar year.
- (5) In addition to any annual reporting requirement set forth in sections 1-3 of this rule, the number of recycling setouts collected during January, April, July, and October shall be reported to the Department for those local governments units where recycling collection is required by ORS 459.180 or required for certification under OAR 340-60-095. This report shall be on forms provided by the Department, and shall be due each following month on the first business day following the 14th of that month. For local government units within the state of Oregon, this report shall be submitted by the person who provides on-route collection required under ORS 459.180. For local government units outside of Oregon, this report shall be submitted, or caused to be submitted, by the regional disposal site that accepts the waste from a local government unit where on-route collection is required for certification under OAR 340-60-095.
- (6) A local government unit or wasteshed representative may develop a written agreement with the Department by which local recycling programs report information of the type required under section (4) and (5) of this rule directly to the local government unit in place of reporting directly to the Department. Such written agreement shall require that:
- (a) The information gathered by the local government unit be at least as comprehensive as the information required under sections (4) and (5) of this rule;
- (b) The local government unit collect the recycling data in a manner compatible with the way that data are gathered

and analyzed by the Department for the rest of the state;

- (c) The local government transmit the data to the Department in a timely manner; and
- (d) The Department shall be able to enforce the reporting of data by local recycling programs to the local government unit in the same manner that the Department enforces direct reporting under sections (4) and (5) of this rule.

[6](7)(a) The cities and counties and other affected persons in each wasteshed should:

- (A) Jointly identify a person as representative for that wasteshed to act as a contact between the affected persons in that wasteshed and the Department in matters relating to the recycling report;
- (B) Inform the Department of the choice of a representative.

(b) The cities and counties and other affected persons in a wasteshed shall gather information from the affected persons in the wasteshed and compile that information into the recycling report.

[7](8) The Department shall review the recycling report to determine whether the opportunity to recycle is being provided to all persons in the wasteshed. The Department shall approve the recycling report if it determines that the report contains all the information required under this rules and wasteshed:

- (a) Is providing the opportunity to recycle, as defined in OAR 340-60-020, for :
 - (A) Each material identified on the list of principal recyclable material for the wasteshed, as specified in OAR 340-60-030, or has demonstrated that at a specific location in the wasteshed a materials ont he list of the principal recyclable material is not a recyclable material for that specific location; and
 - (B) Other materials which are recyclable material at

specific location where the opportunity to recycle is required.

- (b) Has an effective public education and promotion program which meets the requirements of OAR 340-60-040.

Proposed Amendment to Rule Regarding Prohibiting Disposal of
Source-Separated Recyclable Material
(no change from original proposal)

Prohibition

340-60-080

- (1) In addition to the provisions set forth in ORS 459.195, no person shall dispose of source-separated recyclable material which has been collected or received from the generator by any method other than reuse or recycling except for used oil which may be collected and burned for energy recovery.
- (2) This prohibition shall apply to recyclable material which has not been correctly prepared to reasonable specifications referred to in OAR 340-60-075(1). However, this prohibition shall not apply to unauthorized material that has been deposited by the generator at a recycling depot when it is impractical to recycle the unauthorized material, or to collected recycled material later found to be contaminated with hazardous material.

Text of originally-proposed rules relating to charging for yard debris collection (replaced by proposed OAR 340-60-130):

Policy on Charging Additional Fees for Yard Debris Recycling Services

- (1) The Commission's purpose in adopting these rules governing when a fee may be charged for yard debris recycling services is to:
 - (a) ensure that a financial disincentive for recycling is not created for any waste generator; and to
 - (b) recognize that it may not be equitable to distribute the cost of collection and recycling of yard debris across all waste generators due to the extreme variability in volumes generated.
- (2) The purpose as stated in section 1 of this rule is to apply to those recycling programs required under ORS 459.165 to ORS 459.200 and ORS 459.250.

Definitions

- (1) "Residential generator" means any generator of recyclable material located in single or multi-family dwellings up to and including 4 units.

Prohibited and Allowable Fees

- (1) Residential generators of yard debris participating in a yard debris collection service, where yard debris is a principal recyclable material, may be charged a fee for yard debris recycling in addition to the base fee charged for garbage collection if the volume of yard debris material collected each month exceeds one thirty-two gallon garbage collection container or its equivalent.
- (2) Fees for yard debris recycling charged to residential generators of yard debris participating in a yard debris collection service, where yard debris is a principal recyclable material, shall only be applied to volumes of yard debris in excess of those specified in Section (1) of this rule.
- (3) A yard debris recycling fee in addition to the base fee charged for garbage collection and disposal may be charged to generators of yard debris participating in yard debris

collection programs located at depots where yard debris is a principal recyclable material. This additional fee can be charged at any yard debris recycling depot including those which are not solid waste disposal site depots.

- (4) The total additional yard debris recycling fee charged to any generator of yard debris for collection of yard debris shall be less than the fee that would have been charged for collection of that same volume of yard debris as garbage.
- (5) Yard debris recycling fees in addition to the base fee charged for garbage collection and disposal may be charged for the collection of yard debris on-route or at a depot, where yard debris is not a principal recyclable material.

Review Period

These rules are effective through June 1, 1993 at which time the Department shall review the rules and make any recommendations for deletion, changes or continuation of the rules to the Commission.

RULEMAKING STATEMENTS
for
Proposed Revisions to Existing Rules Pertaining to
the Opportunity to Recycle Act

OAR 340, Division 60

Pursuant to ORS 183.335, these statements provide information on the intended action to adopt and revise rules.

STATEMENT OF NEED:

Legal Authority

ORS 459.170 gives the Environmental Quality Commission the authority to adopt rules to carry out the Opportunity to Recycle Act.

Need for Rule

The rule revisions regarding charging an additional fee for yard debris recycling services are necessary to clarify the intent of ORS 459.190 as it relates to yard debris recycling programs. The rule revisions regarding reporting requirements and prohibition against disposal of source-separated recyclable material are necessary to allow for new methods of centralized reporting and to allow used motor oil to continue to be marketed as fuel oil. The latter rule revision is proposed because there are no regional markets for used motor oil which recycles the material back into a lubricating oil. The Department has identified used motor oil as a material which is desirable to keep out of the landfill and therefore would like to allow the material to go to existing state and regional markets.

Principal Documents

- 1) Existing state statute, ORS 459.165 to 459.200 and 459.250
- 2) OAR Chapter 340-60-005 to 340-60-125

Land Use Consistency

These proposed rules and rule revisions do not affect land use as defined in the Department's coordination program approved by the Land Conservation and Development Commission.

FISCAL AND ECONOMIC IMPACT

The net effect of the rule revisions allowing an additional fee to be charged to residents who generate in excess of a specific amount of yard debris in any month could be to increase the cost of service to all garbage service customers to pay for a portion of a yard debris recycling program, with the remainder of the cost being paid by the participants in the program. There is a chance that certain portions of the general public could be economically impacted as a result of the passage of the rule since the rate paid for garbage and recycling collection service could increase. The Department cannot estimate the increase in the collection service rate since rate structures vary across the state and the way in which the rule is implemented could vary between local programs. There should be no significant or adverse economic impact on small businesses or large businesses as a result of these rule revisions, as the rules do not apply to commercial generators of yard debris.

There should be no significant or adverse economic impact on the general public, small businesses, or large businesses as a result of the rule revisions regarding reporting requirements. There will, in fact, be a positive economic impact on the garbage haulers in the Metro area since the rule eliminates duplication of effort on their part.

The net effect of the rule revision regarding prohibiting the disposal of source-separated recyclable material should be to allow the continued collection of used motor oil under the Opportunity to Recycle Act. This should benefit used oil recyclers in the state by maintaining their supply of material. There should be no significant or adverse economic impact on the general public, small businesses or large businesses as a result of this rule revision.

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

Amendments to OAR 340, Division 60 Regarding Recycling

Date Prepared: April 24, 1991

Hearing Date: May 16, 1991

Comments Due: May 16, 1991

**WHO IS
AFFECTED:**

Amendment of rules could affect individuals participating in yard debris recycling programs, garbage haulers in the Portland Metro area and local governments responsible for adopting rate schedules.

**WHAT IS
PROPOSED:**

The Department of Environmental Quality proposes to adopt amendments to OAR 340-60-005 to 340-60-125 which would clarify ORS 459.190 regarding charging an additional fee for yard debris recycling. In addition, the Department is proposing two housekeeping amendments to provide for a new method of centralized reporting of recycling data and enable used oil to be burned for energy recovery.

**WHAT ARE THE
HIGHLIGHTS:**

Proposed amendments would:

- allow a fee, in addition to the base fee charged for garbage collection and disposal service, to be charged to participants of a yard debris recycling program;
- allow a means for centralized reporting of recycling data through a local government unit; and
- exempt source separated used oil from the requirement that it be reused or recycled as long as it is going to be burned for energy recovery.

**HOW TO
COMMENT:**

A Public Hearing will be held before a hearings at:

9:00 a.m. to 12:00 a.m.
Thursday, May 16, 1991
Multnomah County Library
Central Branch, Room B
801 S.W. 10th
Portland, OR 97205

(over)

FOR FURTHER INFORMATION:

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



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

11/1/86

Written or oral comments may be presented at the hearing. Written comments may also be sent to the Department of Environmental Quality, Hazardous and Solid Waste Division, Attn: Lissa West, 811 SW 6th Avenue, Portland, OR 97204, and must be received no later than 5:00 p.m., Thursday, May 16, 1991.

Copies of the proposed rule amendments can be obtained from:

Lissa West
Solid Waste Reduction Specialist
Department of Environmental Quality
Hazardous and Solid Waste Division
811 SW Sixth Avenue
Portland, OR 97204

Telephone: 229-6823
Toll-free: 1-800-452-4011

**WHAT IS THE
NEXT STEP:**

The Environmental Quality Commission may adopt rule amendments identical to the ones proposed, adopt modified rule amendments as a result of testimony received, or may decline to adopt rule amendments. The Commission will consider the proposed rule amendments at its meeting on June 14 1991.

G:\RECY\YB10481 (4/91)

ORS 459.190 to ORS 459.195

459.190 Limitation on amount charged person who source separates recyclable material. A collection service or disposal site may charge a person who source separates recyclable material and makes it available for reuse or recycling less, but not more, for collection and disposal of solid waste and collection of recyclable material than the collection service charges a person who does not source separate recyclable material. [1983 c.729 §11]

459.192 Exemptions. Nothing in ORS 459.005, 459.015, 459.035, 459.165 to 459.200, 459.250, 459.992 and 459.995 applies to recyclable material which is:

(1) Source separated by the generator; and

(2) Purchased from or exchanged by the generator for fair market value for recycling or reuse. [1983 c.729 §12]

459.195 Prohibitions against removing or mixing recyclable material. A person may not:

(1) Without the permission of the owner or generator of recyclable material, take recyclable material set out to be collected by a person authorized by a city or county to provide collection service for that recyclable material.

(2) Remove any recyclable material from a container, box, collection vehicle, depot or other receptacle for the accumulation or storage of recyclable material without permission of the owner of the receptacle.

(3) Mix source separated recyclable material with solid waste in any vehicle, box, container or receptacle used in solid waste collection or disposal. [1983 c.729 §13]

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMORANDUM

DATE: February 6, 1991

TO: Environmental Quality Commission

FROM: Lissa West, staff person to the Solid Waste Reduction Advisory Committee

SUBJECT: Solid Waste Reduction Advisory Committee's discussion on charging a fee for recycling services, changes in reporting requirements, and allowing used oil to be burned for energy recovery

The Department held initial discussions on the issue of charging an additional fee for specific recycling services with the Solid Waste Reduction Advisory Committee at both the September and October meetings. The purpose of the discussions was to receive input on a letter of guidance which the Department was preparing for Metro and the City of Portland on the way in which ORS 459.190 applies to yard debris recycling and commercial recycling.

In general, the Solid Waste Reduction Advisory Committee agreed that an additional charge for providing specific recycling services should be allowable but that the charge should be less than the charge that would have been applied if the material was picked up as garbage. The committee agreed with the Department that many of the details would have to be worked out in the development of rules and should not be contained in the guidance letter.

The Metro Waste Reduction Subcommittee expressed their concern about this issue at the October meeting. They believed that a "user-pay" system (where each participant pays for the level at which they participate in the program) was the fairest way to fund the program since some residents do not generate any yard debris at all.

Memo to: Environmental Quality Commission
February 4, 1991
Page 2

A smaller work group was put together to provide input to the Department on drafting rules regarding fees which could be charged for yard debris recycling programs. Half of the members of the work group are members of the Solid Waste Reduction Advisory Committee. The work group agreed that the rules, as they are proposed in this staff report, were the most reasonable approach to the issue.

The full Solid Waste Reduction Advisory Committee reviewed a draft of the rules included in this report at their meeting on February 6, 1991. The committee suggested minor wording changes to clarify certain portions of the rule. These changes have been incorporated into the rule included in this report as Attachment A (as originally proposed).

The Solid Waste Reduction Advisory Committee reviewed the proposed rule changes on reporting requirements and used oil at the October 12, 1990 meeting. The Committee agreed with the changes to be made to allow centralized reporting as long as the quality of the data was maintained and the data was comparable to other data being collected throughout the state. The Committee voiced some concern over allowing used oil to be burned for energy recovery since this could set a precedent for other materials and could undermine the efforts to develop a market for re-refining of used oil. However, given the fact that used oil is currently being re-evaluated at the federal level to determine if it should be considered a hazardous waste and companies are therefore reluctant to begin dealing with the material, the Committee agreed that an exception could be made in the rule for used oil. The Committee also agreed that any materials which were added to the list of principal recyclable materials could be exempted from this rule at the time they are added.

To: Environmental Quality Commission
From: Hearings Officer
Subject: Report on Public Hearing held May 16, 1991 on proposed rules relating to charging for yard debris recycling and other recycling rule amendments.

Summary of Procedure

A public hearing was held on May 16, 1991 from 9:00 am to noon in Portland at the Multnomah County Library Central Branch to accept testimony on proposed rules to set guidelines relating to charging for yard debris recycling collection, to allow oil collected under the Recycling Opportunity Act to be burned for energy recovery, and to allow recycling collectors to report directly to local jurisdictions instead of directly to the Department if the Department has a written agreement with the local jurisdiction on reporting requirements. Anne Cox of the Hazardous and Solid Waste Division presided as hearings officer, and Peter Spindelov served as solid waste reduction staff liaison.

Persons presenting formal testimony at the hearing included Ed Druback, representing the City of West Linn, and Bob Emrick, representing Oregon Sanitary Service Institute. Steve Kraten, representing Metro, was also present and participated in informal discussions after the formal hearing closed.

Summary of Testimony

Ed Druback, representing the City of West Linn:

Mr. Druback stated that he had a problem with sections 1 and 2 of the "prohibited and allowable fees section (now subsections 4 and 5 of proposed OAR 340-60-130). Mr. Druback outlined three different effects he believed the rule as proposed would have. First, Mr. Druback stated the proposed rule could end up lowering the amount of yard debris recycled in West Linn and in other jurisdictions that use a depot collection system for yard debris and also choose to offer an on-call collection system. The on-

call collection of yard debris is intended for persons who have large quantities of yard debris but do not have a means to transport it to the depots. However, if the on-call collection system had to offer the first 32 gallons of yard debris collection "free", many persons would likely choose this service. Since the depot system provides the opportunity to recycle yard debris under Department rules, and since the on-call collection is an optional addition to the depot system, a jurisdiction may choose not to offer the on call collection and thus avoid the added expense of the many "free" on-call pickups of small quantities of yard debris.

Second, Mr. Druback stated that the proposed rules will muddy a situation that was already clear to many people in the recycling field. Mr. Druback stated that the law allows a charge for recycling yard debris as long as the charge is less than the charge for disposing of the same material as garbage. West Linn has three different rates for managing yard debris in different manners. Self-hauling yard debris to the recycling depot has the cheapest rate. More expensive is using the on-call collection service. Most expensive is disposing of the yard debris as garbage. Mr. Druback also stated that the yard debris charge rule would not be transferable to other similar situations such as commercial recycling, and that there are other items that are not on a list of principal recyclable materials for which it may be appropriate to charge for collection, such as batteries and other hazardous household wastes.

Third, Mr. Druback stated that the proposed rules would limit the ability of jurisdictions to slowly phase in their collection efforts so as to not overwhelm the processing system with too much yard debris early on. If on-call collection is not a practical alternative under the proposed rules, jurisdictions will likely move directly from depot systems to regularly scheduled "free" (cost spread across all garbage customers rather than just collection users) collection, resulting in a sudden great increase in the amount of yard debris collected. Mr. Druback also questioned the choice of 32 gallons as the "free" amount, and stated that if a jurisdiction offered a "minican" garbage service rate, they should be allowed to charge for yard debris collection since customers would be unlikely to be able to fit much yard debris in a minican along with the other garbage to be disposed.

Mr. Druback also stated that he had no problems with the other rule amendments proposed.

Bob Emrick, representing Oregon Sanitary Service Institute (OSSI):

Mr. Emrick served on the Department's Solid Waste Reduction Advisory Committee and the work group that developed the proposed rules. Mr. Emrick stated that OSSI supports the proposed rules, and that although the industry generally does not support recycling systems whereby separate charges may be levied for pulling out and recycling individual components of the waste stream, OSSI understands the basis for the approach in the case of yard debris.

OSSI submitted revised wording for part of the proposed rules that Mr. Emrick believes makes the meaning more clear and address an issue not addressed in the proposed rules. The proposed OSSI language would have the first unit (minimum 32 gallons) of yard debris collected per collection period (rather than per month) be for no additional charge. The OSSI proposal would also clarify that persons who do not have garbage collection could be charged for all their yard debris collected, as long as the charge does not exceed the equivalent charge for collection of solid waste. A copy of the OSSI submittal is attached.

Mr. Emrick also noted that the proposed rule prohibiting charging for the first 32 gallons of yard debris per month applies just to residential yard debris, and also just to collection services and not to depots. Mr. Emrick stated that it was also the intent that the limitation apply just to regularly scheduled collection service, and not to on-call service, although this does not appear in the proposed rule.



Prohibited and Allowable Fees

(1) A fee may be charged to residential generators of yard debris participating in a yard debris collection service, where yard debris is a principal recyclable material. The fee for the first unit of yard debris collection service shall be included in the base fee for garbage collection service, and shall be sufficient to provide the first unit of yard debris service. The first unit of service shall be not less than the equivalent of a 32 gallon can.

(2) A separate fee, in addition to the base rate for garbage collection service (which includes the first unit of yard debris collection service), may be charged to residential generators of yard debris participating in a yard debris collection service for volumes in excess of the first unit of yard debris collection service.

(3) Non-garbage collection customers who have yard debris collection service may be charged a fee for this yard debris collection service.

(Current (3) through (5) as proposed)

To: Environmental Quality Commission

From: Peter Spendelow, Solid Waste Reduction and Recycling Section

Subject: Response to public comment: Yard debris charge proposed rules and recycling rules amendments.

Formal testimony was received from Ed Druback, representing the City of West Linn, and Bob Emrick, representing the Oregon Sanitary Service Institute (OSSI).

1. Comments regarding on-call collection: The rules as proposed would make an on-call collection of yard debris, when offered as a supplement to a depot system, impractical. This could have the effect of causing jurisdictions with depots to decide not to offer on-call yard debris collection. This may lower the amount of yard debris collected through existing programs such as West Linn's, and could make it more difficult for a jurisdiction to smoothly phase in a more effective collection system from an existing depot system (Ed Druback). The proposed rules were envisioned as applying to regularly scheduled collection rather than on-call collection (Bob Emrick).

Department response: The proposed rule did not consider on-call collection services. The Department agrees that clarification is needed. The proposal has been amended to exclude on-call collection from the prohibition on charging for the first can per month of yard debris collection when the on-call collection is offered in conjunction with a depot system or other collection system that provides the opportunity to recycle yard debris (see new proposed OAR 340-60-130 (7)).

2. Comment: The proposed rules would muddy a situation that was already clear, that a charge for recycling can be levied as long as the charge is less than the garbage rate. (Ed Druback).

Department response: The Department believes that there has been widespread misinterpretation of ORS 459.190. There are situations where levying a charge for the collection of recyclables, even if less than the charge for garbage, will still result in a person

paying more if they source-separate their recyclable material than they would pay if they disposed of all their wastes as mixed garbage. Most jurisdictions set a minimum charge for a certain minimum service level for garbage service. A person who generates little garbage and little recyclable material may be able to dispose of both garbage and recyclables as mixed waste and still pay just the minimum garbage fee. However, if that person were to source-separate their material for recycling, and were to be charged an additional fee for the recycling collection, they would end up paying more than they would pay if they did not source-separate their material. This would violate ORS 459.190 even though the recycling fee may be less than the garbage collection fee.

3. Comment: The yard debris charge rules cannot easily be transferred to other materials (Ed Druback).

Department response: The Department agrees that the yard debris charge rules cannot easily be transferred to other materials. For this reason the rules are proposed with a limited duration, to be reevaluated in 1993. These rules are being proposed because yard debris collection has special characteristics that are not like collection of other material, such as the comparatively large quantity in which yard debris is generated and the high variability between generators in the amount of material that is generated. The Department has also proposed examining in more detail whether rules are needed related to charging related to other collection systems such as commercial recycling.

4. Comment: Programs should be able to charge for collection of materials that are not considered principal recyclable materials in a watershed (Ed Druback).

Department response: The Department agrees that collection services are allowed to charge for services that go beyond the requirements for providing the opportunity to recycle, such as collection of materials that are not principal recyclable materials. That is why the rules as proposed would apply only to areas where yard debris is listed as a principal recyclable material.

5. Comment: If a jurisdiction offers a "minican" rate, it should be able to charge for yard debris collection (Ed Druback).

Department response: The Department believes that such a charging scheme would often be a disincentive for persons to separate their garbage and move to a minican for garbage service, since the sum of the yard debris and minican charges would likely be about the same as standard garbage service.

6. Comment: The proposed rules should clarify that persons without solid waste collection service can be charged for even minimum amounts of yard debris collection, within the limits of the limitations of ORS 459.190 (Bob Emrick).

Department response: The Department agrees, and has incorporated language similar to that proposed by OSSI in the proposed rule (see new proposed OAR 340-60-130 (6)).

7. Comment: The quantity of yard debris for which the charge prohibition should apply should be set at one unit, not to exceed 32 gallons, per collection period, rather than a set 32 gallons per month. If a service offers weekly yard debris collection, the first 32 gallons of collection should be provided at no extra charge each week, rather than just 32 gallons each month being at no extra charge (Bob Emrick).

Department response: The Department agrees that the OSSI proposal would provide incentives for persons to participate in the yard debris collection program and the charging system would be much easier to administer. OSSI's recommendations have been incorporated into proposed OAR 340-60-130 (4). OSSI's exact language has not been used, since the language implies that revenue for providing the first unit of yard debris collection must be covered by increasing the base garbage fee. A local government may choose to use other sources of revenue besides the garbage fees to cover part of the cost of yard debris collection. Existing law (ORS 459.200 (9)) does require local government to allow any additional costs to the collector for providing the opportunity to recycle to be recovered in the garbage rates set by local governments under franchising law.

As a final note, a representative of the City of Lake Oswego provided informal testimony before the hearing, stating that City councils should have the flexibility to pay for yard debris collection programs by leveling a charge against all the users of the program, rather than having to fund the program in another way such as having to include some costs of the program in the general garbage rate base. However, the Attorney General has interpreted ORS 459.190 to require that a financial incentive should be provided for persons who source separate their materials for recycling. A system based entirely on user charges would often result in persons paying more if they were to separate their yard debris for recycling, in conflict with ORS 459.190.



Attachment H
Agenda Item E
6/14/91, EQC Meeting

DEPARTMENT OF JUSTICE

PORTLAND OFFICE
1515 SW 5th Avenue
Suite 410
Portland, OR 97201
Telephone: (503) 229-5725
FAX: (503) 229-5120
July 6, 1990

RECEIVED
JUL 09 1990

Hazardous & Solid Waste Division
Department of Environmental Quality

Jan Whitworth
Hazardous and Solid
Waste Division
Department of Environmental
Quality
811 S.W. 6th
Portland, OR 97204

Re: Limitation on Charging for Collection of Recyclables;
ORS 459.120
DOJ No. 340-420-P0021-88

Dear ^{Jan} Ms. Whitworth:

You requested advice concerning interpretation of ORS 459.190 which limits charges for collection of source separated recyclable materials.

Discussion

ORS 459.190 provides:

"A collection service or disposal site may charge a person who source separates recyclable material and makes it available for reuse or recycling less, but not more, for collection and disposal of solid waste and collection of recyclable material than the collection service charges a person who does not source separate recyclable material."

Jan Whitworth
July 6, 1990
Page Two

Legislative Intent

The section was included in the Oregon Recycling Opportunity Act to encourage recycling. The premise of the Act was that recycling of certain materials is desirable as a matter of social, economic, and environmental policy, and is ultimately cheaper than disposal. ORS 459.190 was expressly intended to prevent refuse haulers from charging an extra collection fee to customers who participate in source separation of their recyclables, while charging the customary garbage collection rate to non-participants.¹

The section thus prohibits an overt rate disincentive to recycling with respect to collection service customers.²

Container Based Charges

You have indicated that some collection services desire to charge for collection of recyclables on a container volume basis. The premise for such charges would be that the collectors would not be charging more for collection of recyclables than would be charged for equivalent garbage collection on a container volume basis.

With respect to residential customers, volume charges for collection of recyclable materials³ would appear to violate ORS 459.190. It does not appear possible to consistently determine equivalent volumes of residential garbage and

¹ See, e.g., Section-by-Section Analysis of SB 405A by Lorie Parker, Oregon Environmental Council, June 28, 1983; Hearing Before the Senate Committee on Energy and Environment, May 13, 1983.

² The statute allows, but does not require, lower refuse collection rates for those customers who recycle. Lower rates for those persons who recycle were not mandated because of the difficulty in actually monitoring participation.

³ You have recently indicated that "yard debris" is now considered a recyclable material, and may involve significantly higher costs for large volume collection than the costs of customary recyclables. Yard debris was not specifically considered a recyclable material at the time of inclusion of ORS 459.190; therefore volume-based rates for collection of yard debris might be appropriately considered by the commission in rulemaking.

Jan Whitworth
July 6, 1990
Page Three

recyclables in a manner which would not frustrate the intent of the legislation. A volume based charge is likely to discriminate against those who set out their source separated recyclables in separate containers along with their garbage or on alternate collection days. As an example of the potential for discriminatory effect, if container volume charges were imposed, a customer with a half-full container of garbage and a container of recyclables could be charged for collection of two containers, thereby imposing an added cost of collection for recyclables on the customer who recycles.

Separate Collection Services

The legislative history relevant to ORS 459.190 indicates that the possibility of separate collection services performing the refuse pickup and the recycling pickup respectively was contemplated.⁴ The legislative discussion assumed that franchising of haulers would be the norm under ORS 459.200 and that the respective collection services would be bid accordingly. In such a situation, the costs of collection of recyclables would be established in the rate base for all collection service customers within the franchise area.

Where there is no franchise or other applicable local government control, the legislative intent of ORS 459.190 would appear to prohibit additional separate charges to those customers who source separate for collection of recyclables, whether by the same or different haulers. The haulers and local governments may arrange to cover the costs of recyclables collection by passing the additional costs through to all service customers.

Residential v. Commercial Collection

You also ask whether there is any distinction in the applicability of ORS 459.190 between residential and commercial collection service customers. The Act does not make such a distinction. Therefore, any rates charged by collection services for pickup of commercial recyclables must not violate the intent of the provision.

⁴ See Hearings Before the House Committee on Environment and Energy, June 28, 1983.

Jan Whitworth
July 6, 1990
Page Four

In the commercial setting, however, it may be more difficult to determine how ORS 459.190 actually applies. The portion of a commercial institution's waste which consists of recyclables may vary widely by types of facility, and the volumes of recyclables may also vary significantly. For example, large volumes of recyclables may constitute the bulk of a facility's solid waste stream. Under such circumstances, it would appear that the commission has some latitude to effect a practicable application through rulemaking.

Fair Market Value Recyclers


Your request asks whether ORS 459.192 has any effect on implementation of ORS 459.150. These two provisions are related only to the extent that commercial "fair market value" recyclers are involved. ORS 459.182 exempts so called fair market value recyclers from franchise restrictions and other requirements of the Act. This provision was intended to allow wholesalers and recyclers to continue to compete in the market (usually commercial and industrial markets) for recyclable materials. While a fair market value recycler can legally compete for residential as well as commercial recyclables, they are now required to collect all residential recyclable materials, not just the profitable ones. OAR 340-60-052.

Out-of-State Opportunity to Recycle

Your final question concerns the ORS 459.305 certification requirement for shipments of solid waste to Oregon.

ORS 459.305 requires a certification by the DEQ that a local government provides an opportunity to recycle equivalent to Oregon's before waste from that jurisdiction may be accepted at a regional landfill in Oregon. Since ORS 459.190 is part of the Oregon Recycling Opportunity Act it is applicable when evaluating a jurisdiction's recycling program for equivalency. Therefore, a local jurisdiction shipping waste to an Oregon regional landfill may not charge or allow discriminatory charges for collection of recyclables.

Sincerely,


Larry Edelman
Assistant Attorney General

LE:aa
#2767H

REQUEST FOR EQC ACTION

Meeting Date: June 14, 1991
Agenda Item: G
Division: Water Quality
Section: Industrial Waste

SUBJECT:

Water Quality Industrial Waste Permit Fees

PURPOSE:

Request the Environmental Quality Commission (Commission) to Adopt final Modification of Industrial Waste Water Quality Permit Fees Schedule

ACTION REQUESTED:

- Work Session Discussion
 - General Program Background
 - Potential Strategy, Policy, or Rules
 - Agenda Item ___ for Current Meeting
 - Other: (specify)

- Authorize Rulemaking Hearing
- Adopt Rules
 - Proposed Rules Attachment A
 - Rulemaking Statements Attachment B
 - Fiscal and Economic Impact Statement Attachment C
 - Public Notice Attachment D



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696



Meeting Date: June 14, 1991
Agenda Item: G
Page 2

- Issue a Contested Case Order
 Approve a Stipulated Order
 Enter an Order
 Proposed Order Attachment
- Approve Department Recommendation
 Variance Request Attachment
 Exception to Rule Attachment
 Informational Report Attachment
 Other: (specify) Attachment

DESCRIPTION OF REQUESTED ACTION:

The Commission is requested to adopt the revised rules (Permit Fee Schedules, Wastewater Disposal Permits) found in Attachment A.

On April 26, 1991, the Commission authorized the Department to hold a public hearing on draft rule (fee schedule) modifications. The fee schedule is being modified in order to increase user fees to fund the existing industrial wastewater permitting program and the program enhancements contained in the Governor's recommended budget for FY 91-93.

The Department distributed a notice of a public hearing in accordance with public notice procedures, including a notification to all industrial wastewater permittees. A public hearing was held on May 17, 1991. Based upon comments received at the hearing and other written comments received, minor changes have been made in the proposed rule modification. The modified fee schedule is now ready for adoption by the Commission.

AUTHORITY/NEED FOR ACTION:

- Required by Statute: ORS 468.065 Attachment E
 Enactment Date: _____
 Statutory Authority: _____ Attachment _____
 Pursuant to Rule: OAR 340-45-075 Attachment F
 Pursuant to Federal Law/Rule: _____ Attachment _____
- Other: Attachment _____
 Time Constraints: It is important for the new fee schedule to be in effect by July 1, 1991, so that invoicing for the annual compliance determination fees can reflect the new fee schedule.

Meeting Date: June 14, 1991
Agenda Item: G
Page 3

DEVELOPMENTAL BACKGROUND:

<input checked="" type="checkbox"/> Advisory Committee Report/Recommendation	Attachment <u>G</u>
<input checked="" type="checkbox"/> Hearing Officer's Report/Recommendation	Attachment <u>H</u>
<input checked="" type="checkbox"/> Response to Testimony/Comments	Attachment <u>H</u>
<input checked="" type="checkbox"/> Prior EQC Agenda Items: April 26, 1991, Authorization for Public Hearing	Attachment <u> </u>
<input type="checkbox"/> Other Related Reports/Rules/Statutes:	Attachment <u> </u>
<input checked="" type="checkbox"/> Supplemental Background Information (Rationale For Change in Industrial Waste Permit Fee Schedule)	Attachment <u>I</u>

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

The increase in fees directly affects all industrial facilities with wastewater disposal permits and any proposed new facility which requires a wastewater disposal permit in order to operate in Oregon. Regulating industrial wastewater discharges by issuing permits is the primary method used by the Department to preserve water quality in waters of the State.

The Department used an advisory committee to review the proposed permit fee schedule. That committee, which consists of members of the regulated community as well as other interested parties, supports the proposed fee schedule. See Attachment G.

PROGRAM CONSIDERATIONS:

The 1991-93 Governor's recommended budget for the industrial waste permit fee program projects fee revenue needs of about \$1,327,550 for the biennium. This proposed budget would sustain the existing program and add 3 new positions to help eliminate the current permit backlog and prevent future backlog. The projected revenue with the existing fee schedule is about \$384,400 for the biennium. The revenue projections under the existing and proposed fee schedules are found in Attachment J. The program has attempted to determine the most fair and equitable way to spread the required increase in revenue over the categories of industrial permits and permit processing activities. An attempt has been made to better estimate the staff effort in processing new applications. The modified fees for processing new applications are based upon that estimate.

After reviewing the testimony received during the public participation process, further evaluation has been given to the fees associated with the renewal of minor sources when there is no change in permit limits requested. That permit processing fee is being reduced from the \$1000 previously recommended to \$750.

Another change made in the final proposed rules is a change in OAR 340-45-075(1) which waives filing fees for small suction gold dredges (4 inches or less in suction hose diameter) and small off-stream placer operations processing no more than 5 cubic yards of material per day. These waivers have been practiced in the past but never specifically identified as waivers in the rules.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

1. Recommend adoption of the proposed rules as distributed on public notice, or
2. Recommend adoption of proposed rules which were modified as a result of the public testimony received.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends that the rules be adopted with the minor changes which were made as a result of the public testimony received. The rules (fee schedule) to be adopted are complete in Attachment A.

The rationale used in developing the fee increases is shown in Attachment J. The changes made to the proposed fee schedule as the result of public testimony are as follows:

- a. In the category, "Permit Renewals without request for effluent limit modification", the permit processing fee is being reduced from \$1000 to \$750. This is found in 340-45-075(2)(c), page A - 2.
- b. In 340-45-075(1) Filing Fee, language has been added to formalize the current practice of waiving the filing fee for certain small suction gold dredges and very small off-stream mining operations. See Attachment A, page A - 1.
- c. In the new section on "Minor mining and/or processing operations", some additional wording changes have been made for clarification. Froth flotation has been added as a category. There was also an adjustment in some of the fees. The annual compliance determination fee for the medium chemical leaching category was reduced from \$6,000 to \$4,000. For the small leaching category the annual fee was changed from \$3,000 to \$2,000. See page A - 5 of the fee schedule designated as Attachment A.

Meeting Date: June 14, 1991
Agenda Item: G
Page 5

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE
POLICY:

These changes in the fee schedule are consistent with agency and legislative policy. It is the policy of the state to protect and preserve water quality by regulating wastewater discharges. It is also the policy of the state that a reasonable portion of the costs associated with the wastewater permit program be borne by the regulated community in the form of user fees. The Department's Strategic Plan includes a goal of eliminating the permit backlog. With the revenue generated by the increased fees, it is hoped that the Department can come closer to this realization.

INTENDED FOLLOWUP ACTIONS:


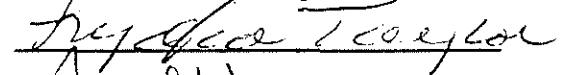

The 1989 legislature included a budget note requiring that fee increases be reviewed by the Ways and Means Committee prior to taking effect. The proposed fees have been submitted to the Transportation Subcommittee of Ways and Means, but no official action has been taken on the budget yet. If the Environmental Quality Commission approves these proposed rules, they will not be filed with the Secretary of State until the Ways and Means Committee has approved the budget. If the Ways and Means Committee makes substantial reductions in the budget which result in a lower fee being required, the Department will return to the Commission for rule revision.

Approved:

Section:

Division:

Director:

Report Prepared By: Charles K. Ashbaker

Phone: 229-5325

Date Prepared: May 13, 1991

CKA:crw
IW\WC8\WC8380
May 23, 1991

PERMIT FEE SCHEDULE
WASTEWATER DISPOSAL PERMITS

NOTE:

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

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

340-45-075

- (1) **Filing Fee.** Unless waived by this rule, a filing fee of \$50 shall accompany any application for issuance, renewal, modification, or transfer of an NPDES permit or WPCF permit, including registration for a General Permit pursuant to OAR 340-45-033 and request for a Special Permit pursuant to OAR 340-14-050. This fee is non-refundable and is in addition to any application processing fee or annual compliance determination fee which might be imposed. The following filing fees are waived:

(a) Small gold mining suction dredges with an intake hose diameter of 4 inches or less.

(b) Small gold mining operations which qualify for General Permit 600, and which can process no more than 5 cubic yards of material per day.

- (2) **Application Processing Fee.** An application processing fee [~~varying between \$75 and \$2000~~] shall be submitted with each application [~~;- except that an application processing fee is not required to register for coverage under a General Permit.~~] The amount of the fee shall depend on the type of facility and the required action as follows:

(a) New Applications:

(A) Major industries ¹	[\$2000]	\$20,000
(B) Minor industries	[\$-600]	\$ 4,000
(C) Major domestic ²		\$ 1,500
(D) Minor domestic		\$ 600
(E) Agricultural	[\$-300]	\$ 4,000

(b) Permit Renewals (including request for effluent limit modification):

(A) Major industries ¹	[\$1000]	\$10,000
(B) Minor industries	[\$-300]	\$ 2,000

(C) Major domestic ²	\$ 750
(D) Minor domestic	\$ 300
(E) Agricultural	[\$-150] <u>\$ 2,000</u>

(c) Permit Renewals (without request for effluent limit modification):

(A) Major industries ¹	[\$-500] <u>\$ 5,000</u>
(B) Minor industries	[\$-200] <u>\$ 750</u>
(C) Major domestic ²	\$ 500
(D) Minor domestic	\$ 200
(E) Agricultural	[\$-100] <u>\$ 750</u>

(d) Permit Modifications (involving increase in effluent limitations):

(A) Major industries ¹	[\$1000] <u>\$10,000</u>
(B) Minor industries	[\$-300] <u>\$ 2,000</u>
(C) Major domestic ²	\$ 750
(D) Minor domestic	\$ 300
(E) Agricultural	[\$-150] <u>\$ 2,000</u>

(e) Permit Modifications (not involving an increase in effluent limits): All categories

340-14-050	[\$--75] <u>\$ 250</u>
----------------------	------------------------

(g) New General Permits, by permit number:

<u>(A) 100, 400, 500, 600 (over 1500 cubic yards per year), 900, 1000</u>	<u>\$ 50</u>
<u>(B) 200, 300, 1300, 1400, 1500, 1600</u>	<u>\$ 100</u>
<u>(C) 1200</u>	<u>\$ 150</u>

(3) Annual Compliance Determination Fee Schedule:

(a) Domestic Waste Sources -- Initial and Annual Fee is based on Dry Weather Design Flow, Type of Facility and Applicable Special Fees as follows:

	<u>Fees</u>
(A ₁) Sewage Disposal - 50 MGD or more	\$20,860
(A ₂) Sewage Disposal - At least 25 MGD but less than 50 MGD	\$14,110
(A ₃) Sewage Disposal - At least 10 MGD but less than 50 MGD	\$ 6,610
(B _a) Sewage Disposal - At least 5 MGD but less than 10 MGD	\$ 5,010

Fees

- (B_b) Sewage Disposal - At least 5 MGD but less than 10 MGD - Systems where treatment occurs in lagoons that discharge to surface waters \$ 5,010
- (C_{1a}) Sewage Disposal - At least 2 MGD but less than 5 MGD \$ 3,285
- (A₁) Sewage Disposal - 50 MGD or more \$20,860
- (C_{1b}) Sewage Disposal - At least 2 MGD but less than 5 MGD - Systems where treatment occurs in lagoons that discharge to surface waters \$ 935
- (C_{2a}) Sewage Disposal - At least 1 MGD but less than 2 MGD \$ 2,210
- (C_{2b}) Sewage Disposal - At least 1 MGD but less than 2 MGD - Systems where treatment occurs in lagoons that discharge to surface waters \$ 845
- (D_a) Sewage Disposal - Less than 1 MGD, and not otherwise categorized under Categories E, F, or G . \$ 755
- (D_b) Sewage Disposal - Less than 1 MGD - Systems where treatment occurs in lagoons that discharge to surface waters which are not otherwise categorized under Categories E, F, or G \$ 450
- (E) Sewage Disposal - Systems where treatment is limited to lagoons which do not discharge to surface waters \$ 250
- (F) Sewage Disposal - Systems larger than 20,000 gallons per day which dispose of treated effluent via subsurface means only \$ 260
- (G) Sewage Disposal - Systems less than 20,000 gallons per day which dispose of treated effluent via subsurface means only and other systems required by OAR 340, Division 71 to have a Water Pollution Control Facilities (WPCF) permit \$ 185
- (H₁) Sources determined by the Department to administer a pretreatment program pursuant to federal pretreatment program regulations (40 CFR, Part 403; January 28, 1981) shall pay an additional \$1,000 per year plus \$335 for each significant industrial user specified in their annual report for the previous year.
- (H₂) In addition to applicable fees specified above, special Annual Compliance Fees for Tualatin Basin Pollution Abatement Activities will be applied to the following permittees until Fiscal Year 1998:

Unified Sewerage Agency - Durham \$26,720
Unified Sewerage Agency - Rock Creek \$22,995

Unified Sewerage Agency - Forest Grove	\$ 5,450
Unified Sewerage Agency - Hillsboro	\$ 4,240
Unified Sewerage Agency - Banks	\$ 185
City of Portland - Tryon Creek	\$ 910

(b) Industrial, Commercial and Agricultural Sources (Source and Initial and Annual Fee):

(For multiple sources on one application select only the one with highest fee)

- (A) Major pulp, paper, paperboard, hardboard, and other fiber pulping industry {\$-2,000} \$ 6,000
- (B) Major sugar beet processing, potato and other vegetable processing, and fruit processing industry {\$-2,000} \$ 6,000
- (C) Seafood Processing Industry:
 - (i) Bottom fish, crab, and/or oyster processing {\$---225} \$ 675
 - (ii) Shrimp processing {\$---225} \$ 675
 - (iii) Salmon and/or tuna processing . {\$---400} \$ 1,200
- (D) Electroplating industry (excludes facilities which do anodizing only):
 - (i) Rectifier output capacity of 15,000 Amps or more {\$-2,000} \$ 6,000
 - (ii) Rectifier output capacity of less than 15,000 Amps but more than 5000 Amps {\$-1,000} \$ 3,000
- (E) Primary Aluminum Smelting {\$-2,000} \$ 6,000
- (F) Primary smelting and/or refining of non-ferrous metals utilizing sand chlorination separation facilities {\$-2,000} \$ 6,000
- (G) Primary smelting and/or refining of ferrous and non-ferrous metals not elsewhere classified above {\$-1,000} \$ 3,000
- (H) Alkalies, chlorine, pesticide, or fertilizer manufacturing with discharge of process waste waters {\$-2,000} \$ 6,000

(I)	Petroleum refineries with a capacity in excess of 15,000 barrels per day discharging process waste water	[\$-2,000}	\$ <u>6,000</u>
(J)	Cooling water discharges in excess of 20,000 BTU/sec	[\$-1,000}	\$ <u>3,000</u>
(K)	Milk products processing industry which processes in excess of 250,000 pounds of milk per day	[\$-2,000}	\$ <u>6,000</u>
(L)	Major mining operations (over 500,000 cubic yards per year)	[\$-2,000}	\$ <u>6,000</u>
[(M) -- Small mining operations which:			
	--(i) Discharge directly to public waters	[\$---225	\$ ---225
	-(ii) Do not discharge to public waters	[\$---150	\$ ---150
	(iii) Use cyanide or other toxic chemicals for extracting precious metals	[-\$-1,000}	-\$-1,000}
<u>(M) Minor mining and/or processing operations:</u>			
	<u>(i) Medium (100,000 to 500,000 cubic yards per year) mechanical processing</u>		<u>\$ 2,000</u>
	<u>(ii) Medium using froth flotation</u>		<u>\$ 3,000</u>
	<u>(iii) Medium using chemical leaching</u>		<u>\$ 4,000</u>
	<u>(iv) Small (less than 100,000 cubic yards per year) mechanical processing</u>		<u>\$ 500</u>
	<u>(v) Small using froth flotation</u>		<u>\$ 1,000</u>
	<u>(vi) Small using chemical leaching</u>		<u>\$ 2,000</u>
(N)	All facilities not elsewhere classified with disposal of process waste water	[\$---400}	\$ <u>1,200</u>
(O)	All facilities not elsewhere classified which dispose of non-process waste waters (i.e., small cooling water discharges, boiler blowdown, filter backwash, log ponds, etc.)	[\$---250}	\$ <u>750</u>
(P)	Dairies and other confined feeding operations on individual permits	[\$---150}	\$ <u>450</u>

(Q)	All facilities which dispose of waste waters only by evaporation from watertight ponds or basins	[\$---150]	\$ <u>450</u>
(R)	General permits 100-J, 200-J, 400-J, 500-J, 1000	[\$----50]	\$ <u>100</u>
(S)	General permit 300-J	[\$----30]	\$ <u>100</u>
(T)	General permits 900-J, 1200-J, 1300-J, 1400, 1500-J, <u>1600</u>	[\$----80]	\$ <u>100</u>

¹ Major Industries Qualifying Factors:

- 1- Discharges large BOD loads; or
- 2- Is a large metals facility; or
- 3- Has significant toxic discharges; or
- 4- Has a treatment system which, if not operated properly, will have a significant adverse impact on the receiving stream; or
- 5- Any other industry which the Department determines needs special regulatory control.

² Major Domestic Qualifying Factors:

- 1- Serving more than 10,000 people; or
- 2- Serving industries which can have a significant impact on the treatment system.

STATEMENT OF NEED FOR RULEMAKING

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

(1) Legal Authority

Oregon Revised Statutes (ORS) 468.065 authorizes the Department to adopt permit fees by rule. The fees are to be based upon the anticipated cost of filing and investigating the application, of issuing or denying the requested permit, and of an inspection program to determine compliance or noncompliance with the permit.

(2) Need for the Rule

The current permit fee schedule, which was adopted pursuant to ORS 468.065, is inadequate to cover the costs of processing permit applications and determining compliance with the water quality permits. It is proposed to modify the fee schedule to better correspond with the costs of administering the permit program and of meeting the revenue needs projected by the Governor's recommended budget.

(3) Principal Documents Relied Upon in this Rulemaking

Oregon Revised Statutes 468.065 Issuance of permits; content; fees; use.

Oregon Administrative Rules 340-45-070 Permit Fees

Oregon Administrative Rules 340-45-075 Permit Fee Schedule

Department of Environmental Quality 1991-1993 Budget Request

These documents are available for review during normal business hours at the Department's office, 811 SW Sixth, Portland, Oregon.

LAND USE COMPATIBILITY STATEMENT

Land Use Consistency

This increase in fees does not directly affect land use. It does indirectly affect Goal 6 (Air, Water and Land Resources Quality) in that the fees are used by the Department to implement the waste water permit program for regulating the discharge of pollutants and for the improvement of water quality.

FISCAL AND ECONOMIC IMPACT1. Other State Agencies:

The proposed fee increases will affect other state agencies which have waste water discharge permits for non-sewage waste waters. The agency most severely impacted would be the Department of Fish and Wildlife. They have several fish hatcheries which have waste water discharge permits. In order to reduce the impact, the Department has issued a general permit which covers fish hatcheries. The fees associated with processing applications and determining compliance are much less with facilities covered by general permits than they are with facilities covered by individual permits. The proposed fee schedule will increase the annual compliance determination fees from \$30 per year per hatchery to \$100 per year per hatchery. With 40 hatcheries, this will increase their total annual fees from \$1200 to \$4000.

2. Municipalities such as service districts, cities and counties.

There are a few municipalities which have permits for non-sewage waste waters, such as cooling water, filter backwash, geothermal disposal, and storm water discharges. Most of these "non-sewage" activities are covered by general permits. These fees for activities covered by general permits will increase from a fee of \$50 per year to \$100 per year.

3. Small business.

Any small business with a waste water discharge permit for industrial discharges will be impacted by these fee increases. The annual compliance determination fees will increase about three times (from about \$250 - 400 per year to about \$450 - 1200 per year) for those facilities which must have an individual permit. If they are covered by a general permit, the annual fee will increase from \$50 per year to \$100 per year.

4. All Businesses.

All businesses with a permitted discharge of industrial waste water will be affected. The increase in the annual compliance determination fees will be about three times over what it is at the present time. The large complex (major) industries will pay \$6000 per year. These major industries include pulp mills and wet process hardboard, primary metals manufacturing, chemical manufacturing, and large food processing facilities. New facilities planning to locate within the state will be paying fees in the range of \$4000 to get a waste water permit if they are a minor facility and \$20,000 if they are a major facility.

The Department has tried to establish a schedule of fees which is proportional to the resources needed to process permit applications and determine compliance. The small business impact, if covered by a General Permit would be \$100 per year. If covered by an individual permit will be \$450 to \$1200 per year. This is about 3 times what it is under the existing fee schedule. The Commission may reduce or suspend the fee for a particular facility in the event of a proven hardship.

A CHANCE TO COMMENT ON...

INCREASE IN WASTEWATER PERMIT FEES FOR INDUSTRIAL SOURCES

Hearing Date: 5-17-91

Comments Due: 5-17-91

WHO IS AFFECTED: All industrial wastewater disposal permit holders and applicants for industrial wastewater disposal permits.

WHAT IS PROPOSED: The Department of Environmental Quality is proposing to amend OAR 340-45-075 (Permit Fee Schedule). The fees will be increased in order to generate the required projected revenue requirements of the Governor's recommended budget for the water quality industrial waste program. It is possible that the revenue requirements may be increased or decreased before the final budget is approved by the legislature.

WHAT ARE THE HIGHLIGHTS: The annual compliance determination fees will be tripled for individual permits. They will be doubled for general permits. A small permit processing fee will be added for general permits. There will be a significant increase in permit processing fees for individual permits, especially for major and complex sources. The fee schedule will be based more closely upon actual resources used in processing the applications. Additional mining and ore processing categories have been added in the fee schedule.

The Department has used an advisory committee to review the fee schedule. It consists of industrial, environmental and state representatives. A list of persons who serve on the committee is attached.

HOW TO COMMENT: Copies of the complete proposed rule package may be obtained from the Water Quality Division in Portland (811 S.W. Sixth Avenue) or the regional office nearest you. For further information contact Kent Ashbaker at 229-5352.

A public hearing will be held before a hearings officer at:

Time - 1:00 p.m.

Date - May 17, 1991

Place - Room 3A, Executive Building
811 S.W. Sixth Avenue, Portland



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

11/1/86

FOR FURTHER INFORMATION:

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

Oral and written comments will be accepted at the public hearing. Written comments may be sent to the DEQ Water Quality Division, 811 S.W. Sixth Avenue, Portland, Oregon 97204, but must be received by no later than 5:00 p.m. May 17, 1991.

WHAT IS THE
NEXT STEP:

After public hearing the Environmental Quality Commission may adopt rule amendments identical to the proposed amendments, adopt modified rule amendments on the same subject matter, or decline to act. The Commission's deliberation should come on June 14, 1991 as part of the agenda of a regularly schedule Commission meeting.

A Statement of Need, Fiscal and Economic Impact Statement, and Land Use Consistency Statement are attached to this notice.

DEQ Water Quality Industrial Permit Fee Advisory Committee

Tom Krause
Glenbrook Nickel
P.O. Box 85
Riddle, OR 97469
874-3171

Richard L. Barrett
WILLAMETTE INDUSTRIES
P.O. Box 907
Albany, OR 97321
926-7771

Jean Cameron, Associate Director
Oregon Environmental Council
2637 S.W. Water Avenue
Portland, OR 97201
222-1963

R. Jerry Bollen
Manager Environmental and Regulatory Affairs
WEYERHAEUSER COMPANY
Tacoma, WA 98477
(206)924-3658
FAX: (206)924-3658

Gabriella Lang
Department of Economic Development
775 Summer Street, N.E.
Salem, OR 97310
373-1225

Tom Donaca
Associated Oregon Industries
P.O. Box 12519
Salem, OR 97309-0519
588-0050

D'Mark Mick
AGRIPAC, INC.
101 S. Birdseye Avenue
Woodburn, OR 97071
982-3544

Larry Patterson
ATOCHEM NORTH AMERICA, INC.
P.O. Box 4102
Portland, OR 97208
225-7210

so provided, as may be fixed by the director, and shall be reimbursed for all expenses actually and necessarily incurred by the deputy director in the performance of the official duties of the deputy director. [1973 c.291 §2]

Note: 468.050 was enacted into law by the Legislative Assembly but was not added to or made a part of ORS chapter 468 or any series therein by legislative action. See Preface to Oregon Revised Statutes for further explanation.

468.055 Contracts with Health Division. In addition to the authority granted under ORS 190.003 to 190.110, when authorized by the commission and the Health Division, the director and the Assistant Director for Health may contract on behalf of their respective agencies for the purposes of carrying out the functions of either agency, defining areas of responsibility, furnishing services or employees by one to the other and generally providing cooperative action in the interests of public health and the quality of the environment in Oregon. Each contracting agency is directed to maintain liaison with the other and to cooperate with the other in all matters of joint concern or interest. [Formerly 449.062]

468.060 Enforcement of rules by health agencies. On its own motion after public hearing, the commission may grant specific authorization to the Health Division or to any county, district or city board of health to enforce any rule of the commission relating to air or water pollution or solid wastes. [Formerly 449.064]

468.065 Issuance of permits; content; fees; use. Subject to any specific requirements imposed by ORS 448.305, 454.010 to 454.040, 454.205 to 454.255, 454.405, 454.425, 454.505 to 454.535, 454.605 to 454.745 and this chapter:

(1) Applications for all permits authorized or required by ORS 448.305, 454.010 to 454.040, 454.205 to 454.255, 454.405, 454.425, 454.505 to 454.535, 454.605 to 454.745 and this chapter shall be made in a form prescribed by the department. Any permit issued by the department shall specify its duration, and the conditions for compliance with the rules and standards, if any, adopted by the commission pursuant to ORS 448.305, 454.010 to 454.040, 454.205 to 454.255, 454.405, 454.425, 454.505 to 454.535, 454.605 to 454.745 and this chapter.

(2) By rule and after hearing, the commission may establish a schedule of fees for permits issued pursuant to ORS 468.310, 468.315, 468.555 and 468.740. The fees contained in the schedule shall be based upon the anticipated cost of filing and investigating the application, of issuing or denying the requested permit, and of an inspection program to determine compliance or noncompli-

ance with the permit. The fee shall accompany the application for the permit.

(3) An applicant for certification of a project under ORS 468.732 or 468.734 shall pay as a fee all expenses incurred by the commission and department related to the review and decision of the director and commission. These expenses may include legal expenses, expenses incurred in processing and evaluating the application, issuing or denying certification and expenses of commissioning an independent study by a contractor of any aspect of the proposed project. These expenses shall not include the costs incurred in defending a decision of either the director or the commission against appeals or legal challenges. Every applicant for certification shall submit to the department a fee at the same time as the application for certification is filed. The fee for a new project shall be \$5,000, and the fee for an existing project needing relicensure shall be \$3,000. To the extent possible, the full cost of the investigation shall be paid from the application fee paid under this section. However, if the costs exceed the fee, the applicant shall pay any excess costs shown in an itemized statement prepared by the department. In no event shall the department incur expenses to be borne by the applicant in excess of 110 percent of the fee initially paid without prior notification to the applicant. In no event shall the total fee exceed \$40,000 for a new project or \$30,000 for an existing project needing relicensure. If the costs are less than the initial fee paid, the excess shall be refunded to the applicant.

(4) The department may require the submission of plans, specifications and corrections and revisions thereto and such other reasonable information as it considers necessary to determine the eligibility of the applicant for the permit.

(5) The department may require periodic reports from persons who hold permits under ORS 448.305, 454.010 to 454.040, 454.205 to 454.225, 454.405, 454.425, 454.505 to 454.535, 454.605 to 454.745 and this chapter. The report shall be in a form prescribed by the department and shall contain such information as to the amount and nature or common description of the pollutant, contaminant or waste and such other information as the department may require.

(6) Any fee collected under this section shall be deposited in the State Treasury to the credit of an account of the department. Such fees are continuously appropriated to meet the administrative expenses of the program for which they are collected. The fees accompanying an application to a regional air pollution control authority pursuant to a permit program authorized by the commis-

ATTACHMENT 1

OREGON ADMINISTRATIVE RULES
CHAPTER 340, DIVISION 45 — DEPARTMENT OF ENVIRONMENTAL QUALITY

date of mailing of such notice unless within that time the permittee requests a hearing before the Commission or its authorized representative. Such request for a hearing shall be made in writing to the Director and shall state the grounds for the request. Any hearing held shall be conducted pursuant to the regulations of the Department. The Director may suspend or revoke an NPDES without notification by registered or certified mail if the suspension or revocation is in response to a request for such from the permittee.

(2) If the Department finds that there is a serious danger to the public health or safety or that irreparable damage to a resource will occur, it may, pursuant to applicable statutes, suspend or revoke a NPDES permit effective immediately. Notice of such suspension or revocation must state the reasons for such action and advise the permittee that he may request a hearing before the Commission or its authorized representative. Such request for a hearing shall be made in writing to the Director within 90 days of the date of suspension and shall state the grounds for the request. Any hearing shall be conducted pursuant to the regulations of the Department.

Stat. Auth.: ORS Ch. 468

Hist.: DEQ 53(Temp), f. & ef. 6-21-73 thru 10-18-73; DEQ 58, f. 9-21-73, ef. 10-25-73; DEQ 113, f. & ef. 5-10-76; DEQ 22-1981, f. & ef. 9-2-81

[ED. NOTE: The text of Temporary Rules is not printed in the Oregon Administrative Rules Compilation. Copies may be obtained from the adopting agency or the Secretary of State.]

Industrial Waste Pretreatment

340-45-063 (1) All owners of sewerage systems which receive industrial waste subject to federal or state pretreatment standards shall develop and implement a pretreatment program for controlling those industrial contributors. The program shall be submitted to the Director for approval. Prior to approval, the Director shall provide opportunity for public comment by issuing a public notice of the receipt of a pretreatment program. Opportunity shall also be provided for a public hearing. Any person or group of persons may request or petition for a public hearing. A public hearing will be held if the owner of the affected sewerage system so requests. Also, if the Director determines that useful information may be produced thereby, or if there is significant public interest, a hearing will be held.

(2) The Director will review requests for revisions of categorical pretreatment standards to reflect removals achieved by the sewerage system. No removal credit is allowed unless approved by the Director.

(3) Both the owners of sewerage systems receiving industrial wastes and the industrial contributors shall comply with applicable pretreatment provisions of the federal Clean Water Act and the rules of the Department.

(4) Where a question exists as to whether or not an industrial contributor falls within a particular industrial subcategory, the Director shall make a written finding and shall submit it to the EPA

Regional Enforcement Division Director for a final determination, unless the Enforcement Division Director waives the receipt of the Director's determination as provided in the federal regulations. In that case the Director's determination shall be final.

(5) The owner of a sewerage system receiving industrial waste is responsible to assure that the industrial contributor meets the prohibited discharge or categorical pretreatment standards established by the United State Environmental Protection Agency or the Department, whichever is most limiting. The owner of the sewerage system may impose more stringent pretreatment standards if deemed necessary by the owner for the proper operation and maintenance of the sewerage system or disposability of the sewage sludge.

(6) The Director will review requests for Fundamentally Different Factors variances and shall either deny them or concur with them and submit the concurrence to the United State Environmental Protection Agency for approval, as provided in federal regulations.

Stat. Auth.: ORS Ch. 468

Hist.: DEQ 16-1980, f. & ef. 5-27-80

Other Requirements

340-45-065 (1) Prior to commencing construction on any waste collection, treatment, disposal, or discharge facilities for which a permit is required by rule 340-45-015, detailed plans and specifications must be submitted to and approved in writing by the Department as required by ORS 468.742; and for privately owned sewerage systems, a performance bond must be filed with the Department as required by ORS 454.425.

(2) Monitoring, recording, and reporting procedures used to meet the requirements of a NPDES permit shall conform with the Federal Act and regulations issued pursuant thereto.

Stat. Auth.: ORS Ch. 468

Hist.: DEQ 53(Temp), f. & ef. 6-21-73 thru 10-18-73; DEQ 58, f. 9-21-73, ef. 10-25-73; DEQ 113, f. & ef. 5-10-76; DEQ 126(Temp), f. & ef. 12-30-76 thru 4-28-77; DEQ 133, f. & ef. 5-2-77

[ED. NOTE: The text of Temporary Rules is not printed in the Oregon Administrative Rules Compilation. Copies may be obtained from the adopting agency or the Secretary of State.]

Permit Fees

340-45-070 (1) Beginning July 1, 1976, all persons required to have a Water Pollution Control Facilities Permit or NPDES Waste Discharge Permit shall be subject to a three-part fee consisting of a uniform non-refundable filing fee, an application processing fee, and an annual compliance determination fee which are obtained from OAR 340-45-075. The amount equal to the filing fee, application processing fee, and the first year's annual compliance determination fee shall be submitted as a required part of any application for a new NPDES or WPCF permit. The amount equal to the filing fee and application processing fee, if

**OREGON ADMINISTRATIVE RULES
CHAPTER 340, DIVISION 45 — DEPARTMENT OF ENVIRONMENTAL QUALITY**

applicable, shall be submitted as a required part of any application for renewal or modification of a NPDES or WPCF permit.

(2) The annual compliance determination fee, as listed in OAR 340-45-075(3), must be paid for each year a disposal system is in operation or during which a discharge to public waters occurs. The fee period shall correspond with the state's fiscal year (July 1 through June 30) and shall be paid annually during the month of July. Any annual compliance determination fee submitted as part of an application for a new NPDES or WPCF permit shall apply to the fiscal year the permitted facility is put into operation. For the first year's operation, the full fee shall apply if the facility is placed into operation on or before May 1. Any new facility placed into operation after May 1 shall not owe a compliance determination fee until the following July. The Director may alter the due date for the annual compliance determination fee upon receipt of a justifiable request from a permittee. The Commission may reduce or suspend the annual compliance determination fee in the event of a proven hardship.

(3) Modifications of existing, unexpired permits which are instituted by the Department due to changing conditions or standards, receipts of additional information or any other reason pursuant to applicable statutes and do not require refileing or review of an application or plans and specifications shall not require submission of the filing fee or the application processing fee.

(4) Upon the Department accepting an application for filing, the filing fee shall be non-refundable.

(5) The application processing fee may be refunded in whole or in part when submitted with an application if either of the following conditions exist:

(a) The Department determines that no permit will be required.

(b) The Department determines that the wrong application has been filed.

(6) All fees shall be made payable to the Department of Environmental Quality.

Stat. Auth.: ORS Ch. 468

Hist.: DEQ 113, f. & ef. 5-10-76; DEQ 129, f. & ef. 3-16-77;

DEQ 31-1979, f. & ef. 10-1-79; DEQ 18-1981, f. & ef. 7-13-

81; DEQ 12-1983, f. & ef. 6-2-83

Permit Fee Schedule

340-45-075 (1) Filing Fee. A filing fee of \$50 shall accompany any application for issuance, renewal, modification, or transfer of an NPDES Waste Discharge Permit or Water Pollution Control Facilities Permit. This fee is non-refundable and is in addition to any application processing fee or annual compliance determination fee which might be imposed.

(2) **Application Processing Fee.** An application processing fee varying between \$75 and \$2,000 shall be submitted with each application. The amount of the fee shall depend on the type of facility and the required action as follows:

(a) **New Applications:**

(A) Major industries¹\$2000

(B) Minor industries\$ 600
(C) Major domestic²\$1500
(D) Minor domestic\$ 600
(E) Agricultural.....\$ 300
(b) **Permit Renewals (including request for effluent limit modification):**

(A) Major industries¹\$1000
(B) Minor industries\$ 300
(C) Major domestic²\$ 750
(D) Minor Domestic.....\$ 300
(E) Agricultural.....\$ 150
(c) **Permit Renewals (without request for effluent limit modification):**

(A) Major industries¹\$ 500
(B) Minor industries\$ 200
(C) Major domestic²\$ 500
(D) Minor domestic\$ 200
(E) Agricultural.....\$ 100
(d) **Permit Modifications (involving increase in effluent limits):**

(A) Major industries¹\$1000
(B) Minor industries\$ 300
(C) Major domestic²\$ 750
(D) Minor domestic\$ 300
(E) Agricultural.....\$ 150
(e) **Permit Modifications (not involving an increase in effluent limits): All categories.....\$ 75**

(3) **Annual Compliance Determination Fee Schedule:**

(a) **Domestic Waste Sources (Select only one category per permit) (Category, Dry Weather Design Flow, and Initial and Annual Fee):**

(A) Sewage Disposal — 10 MGD or more\$1150
(B) Sewage Disposal — At least 5 but less than 10 MGD.....\$ 900
(C) Sewage Disposal — At least 1 but less than 5 MGD.....\$ 500
(D) Sewage Disposal — Less than 1 MGD

.....\$ 300
(E) Non-overflow sewage lagoons.....\$ 150
(F) Subsurface Sewage disposal systems larger than 20,000 gallons per day.....\$ 150

(G) Subsurface sewage disposal systems larger than 5000 gallons per day but not greater than 20,000 gallons per day\$ 100

(b) **Industrial, Commercial and Agricultural Sources (Source and Initial and Annual Fee):**

(For multiple sources on one application select only the one with highest fee)

(A) Major pulp, paper, paperboard, hardboard, and other fiber pulping industry\$1400

(B) Major sugar beet processing, potato and other vegetable processing, and fruit processing industry.....\$1400

(C) **Fish Processing Industry:**
(i) Bottom fish, crab, and/or oyster processing\$ 175

(ii) Shrimp processing.....\$ 175

(iii) Salmon and/or tuna canning\$ 300

(D) **Electroplating industry (excludes facilities which do anodizing only):**

(i) Rectifier output capacity of 15,000 Amps or more\$1400

(ii) Rectifier output capacity of less than 15,000 Amps, but more than 5000 Amps\$700

DATE: April 8, 1991
TO: The Environmental Quality Commission
FROM: The DEQ Water Quality Industrial Permit Fee Advisory
Committee
RE: Proposed Water Quality Permit Fee Increases

Dear Chairperson Hutchison and Members of the Environmental Quality Commission:

The Advisory committee appreciated the opportunity to review the proposed fee increase schedule with Kent Ashbaker of your staff. This continues a long and important part of the relationship between the DEQ, the regulated community and the affected public by providing a forum for dialogue between those affected parties on important issues relating to the environment.

The Advisory Committee met with your staff on two occasions. In the final version of the proposed fee schedule which is before you for consideration we find, based on the charge given your staff to increase fees primarily to offset reduction in state general funds, that the proposed distribution of fees in the schedule is both a rational and fair distribution of the proposed fee increase. However, this endorsement is subject to the recommendations listed below. Further, we make no comment on fees relating to mining or to the stormwater runoff program.

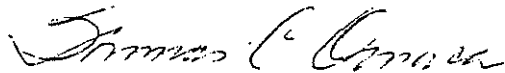
The following are also the recommendations of the Advisory Committee:

1. The DEQ should seek to retain all or a substantial portion of the lost General Funds for this program.
2. In view of the substantial increase in fees, which will be implemented mid-year, many firms will not have budgeted for such an increase. We suggest consideration of a phased approach to the implementation of proposed fees. If the full amount must be implemented, perhaps 50% in each of years one and two. If some recovery of General Funds occurs, then some different phasing should be considered.
3. As NPDES permit holders receive new permits, they are finding that more stringent standards, for such things as monitoring, are causing large increases in costs to permittees. One firm is facing a 25 times increase in their monitoring costs. Thus, not only are permit costs going up sharply, so are the costs of compliance.

4. There is a general concern about fee increases, not only because of the general increases in fees being requested by this agency, but fee increases are being proposed in many areas of both state and local government while at the same time many industries are having to cut their operating costs. Thus, before fee increases are imposed, it is suggested that the Commission review all DEQ programs, particularly discretionary ones, in a good faith effort to reduce the cost of your programs as many Oregon industries are having to do.

Again, the members of the Advisory Committee appreciate this opportunity to comment. We do understand the importance of the need to properly finance the industrial water quality section of the DEQ. The comments under "proviso's" should be understood as providing you with an understanding that there is some reluctance to fully endorse the proposed fee increase by all subject persons.

Sincerely,



Thomas C. Donaca for the
DEQ Water Quality Industrial Permit
Fee Advisory Committee

TD:mk

DATE: May 23, 1991

TO: Environmental Quality Commission

FROM: Kent Ashbaker, Hearings Officer

SUBJECT: Hearing Officer Report - IW Permit Fee Increase

A public hearing was held May 17, 1991, to receive testimony regarding the proposed modification of the Wastewater Disposal Permit Fee Schedule for industrial and agricultural sources. A summary of the testimony and a response to the testimony follows:

Oral Testimony

Eugene Rosolie, Northwest Environmental Advocates

Testimony

Mr. Rosolie testified in support of the increased fees. However, he indicated that the Department did not go far enough. He would like the program to be totally fee supported rather than the 50% support it is getting at the present time. He suggested that the fees be increased to accomplish this, even if it was necessary to phase them in.

Response

As long as federal funds are available, the DEQ should continue to use some of those funds for administering the NPDES permit program. Federal funds and general funds always add some funding stability to the program. The general public is benefitted by the permit program and should provide some of the support.

Richard Mansfield, Callahan Ridge Winery

Testimony

Mr. Mansfield testified that the fees were too high and yet another burden on small business. He thought that the annual fee of \$1200 was too much for a small winery that was putting all of its wastewater back on the land. He suggested that the DEQ not have an annual fee and that the permit processing fees remain as they are.

Response

I suggested to Mr. Callahan that his winery probably qualifies for a General Permit which the DEQ had issued to cover small

Memo to: Environmental Quality Commission
May 17, 1991
Page 2

food processors. If so, the annual fees would be only \$100. He was pleased if that was the case.

Written Testimony

Trudy Webb, Inland Quick Freeze and Storage

Testimony

Ms. Webb was concerned about the effect of the fee increase on small business. She was especially concerned about paying a \$1200 annual compliance determination fee when they are not in operation and haven't been for some time. She believes that the result of Measure 5 should be reduced spending, not increased fees.

Loren D. Koller, Dean, College of Veterinary Medicine, OSU

Testimony

Dr. Koller registered his opposition to the fee increase. He thought the fees were too much for the Veterinary Medical Animal Isolation Laboratory (VMAIL). He requested that his facility be exempt from fee increases. Loss of revenue and increased fees could cripple the facility to the extent of closure.

Ernest R. Wells, Gold Miner,

Testimony

Mr. Wells expressed opposition to the fee increase. He was concerned that fees for some of the General Permits had increased. He also expressed concern with the permit processing fees when the country is in a recession. Mr. Wells was particularly concerned with the increase in fees to renew a permit with no increase in effluent limits. For that category of permit activity, the fee changes from \$200 to \$1000.

Bruce Parke, Gold Miner, Sumpter

Testimony

Mr. Parke suggested that the increase in fees will cause a decline in the mining industry and other industries in the state. He considers the fees a lien against property and a tax on the right to work. He believes that we should be creating an incentive to enter into a viable business rather than destroying it.

Jan Alexander, Unity

Testimony

Ms. Alexander is opposed to a significant fee increase because of the adverse effect on industrial development. She indicated

Memo to: Environmental Quality Commission
May 17, 1991
Page 3

that permit processing fees were too high with no provisions for timely issuance of permits. She indicated that she believes that the high fees will keep industry out of Oregon.

M.E. Main, Main Rock, North Bend

Testimony

Mr. Main indicated that the fee increase is coming at a bad time with logging reductions. He indicated that the increased fees will damage the economic stability of all Oregon Businesses. He indicated that the fees may put many people out of work.

Richard Erath, Knudsen Erath Winery, Dundee

Testimony

Mr. Erath strongly opposes the increase in fees. As a small winery, he indicated that he can't afford it. He thinks \$350 per year for his facility is too much. He indicated that those who discharge to a municipal sewer don't pay any fees.

Gary Neal, Port of Morrow

Testimony

Mr. Neal indicated that he thought out ever increasing fees would drive industry elsewhere. He suggested that the Department control costs better.

Response to Written Comments

Some of the permittees which commented do not understand where they fit on the permit fee schedule. A letter has been sent to each one of them indicating what their individual fees will be. Some of the small businesses that commented on the fees may be eligible for coverage on one of the General Permits. The Department will explore that possibility with each permittee that submitted written comments.

Although the permit processing fees for major industries is large, they are a small percentage of the cost of developing a major project and for the complex proposals, they still represent only about 50% of the costs to the Department for processing the application. The fees for minor facilities are proportionally smaller.

The Department has reviewed the proposed fees for the renewal of minor permits where no increase in effluent is proposed. It has been determined that in some cases it may be excessive. Therefore, the proposed fee of \$1,000 will be reduced to \$750.

Memo to: Environmental Quality Commission
May 17, 1991
Page 4

Some of those who commented were small gold miners who thought that the Department was adding some fees not normally charged in the past. Some changes will be made in the fee schedule to clarify that issue. The filing fees for small suction dredges and small off-stream mechanical ore processing facilities will be waived. Some additional changes in the definition of small and medium mining operations will also be made in the final schedule.

RATIONALE FOR CHANGE IN INDUSTRIAL WASTE PERMIT FEE SCHEDULE

PROJECTED REVENUES FROM EXISTING FEE SCHEDULE

During each year of the biennium there will be 5 major permits due for renewal and 20 minor permits. Under the current fee schedule and existing sources, the projected revenue for each year of the 1991-93 biennium is as follows:

Annual Compliance Determination Fees - - - - -	\$173,625
Permit renewal fees for major sources (5 X 550) - -	2,750
Permit renewal fees for minor sources-(20 X 250) -	5,000
Fees from new permit applications ¹ - - - - -	16,950
Total	\$198,325

¹ The estimated number of new applications is based upon the record of the past 4 years, as follows:

YEAR	INDIVIDUAL PERMITS	GENERAL PERMITS
1986-87	24	51
1987-88	16	43
1988-89	23	51
1989-90	<u>25</u>	<u>66</u>
Average	22	53

The current fee schedule consists of \$50 filing fee for all permits and a \$600 processing fee for individual permits.

$$(22 \times 650 = 14,300) \text{ plus } (53 \times 50 = 2,650) = \$16,950$$

About 88 percent of all fees are from the annual compliance determination fees. Although some major increases in permit application fees should be part of the permit fee schedule, most of the increase in revenue should come from the compliance determination fees, since the majority of staff time is spent on compliance determination. The permit processing fees are not a consistent and reliable source of revenue since the permit renewals vary from year to year and new source applications cannot be predicted.

REQUIRED REVENUES IN THE GOVERNOR'S RECOMMENDED BUDGET

Revenues from permit fees required - \$664,000

This required revenue projection is 340 percent above the revenue projections associated with the current fee schedule.

Suggested strategy:

Increase annual compliance determination fees by 300 percent, except for General Permits. The annual fees for General Permits should be doubled. Make up the difference by increasing permit processing fees.

PROPOSED FEE SCHEDULE

Annual Compliance Determination Fees

Increase existing annual fees by 300 percent.

Category (code)	No. Sources	Current Fees	Current Totals	Proposed Fees	Proposed Totals
IW-A, B, D1, E, F, H, K, L	32	\$2,000	\$64,000	\$6,000	\$192,000
IW-D2, G, J, M3	7	1,000	7,000	3,000	21,000
IW-N	129	400	51,600	1,200	154,800
IW-O	65	250	16,250	750	29,250
IW-M1	11	225	2,475	675	7,425
AG-A, IW-M2, Q	<u>45</u>	150	<u>6,750</u>	450	<u>20,250</u>
Totals	289		\$148,075		\$424,725
GENERAL PERMITS ²	475		<u>25,550</u>		<u>47,500</u>
			Totals \$173,625		\$472,225

² GENERAL PERMITS		No.	Current Fee	Current Totals	Proposed
General Permits 100 thru 500, 1000		325	\$50	16,250	\$100 per category
General Permits 300		54	30	1,620	
General Permits 900, 1200 thru 1500		<u>96</u>	80	<u>7,680</u>	
		Totals 475		\$25,550	<u>\$47,500</u>

SUMMARY

	Current Fee Schedule	Proposed Fee Schedule
Annual Fees	\$173,625	\$472,225
Application Fees	24,700	(191,775) needed
Total	\$198,325	\$664,000

This leaves a balance of \$191,775 to be raised by a revised permit application processing fee schedule.

Permit Application Processing

Increase the permit processing fee for new permit applications to better represent the staff effort required to process the application. To do this, the amount of total hours required from all parties will be estimated and an hourly rate will be assessed to arrive at an estimated cost.

There will be a number of personnel working on each new permit with pay scales ranging from 15 to 32. To determine an average hourly wage to charge, the middle of range 26 will be used or \$2837 per month. Adding 35% for OPE and an additional 23.1% for indirect costs will increase the salary scale to \$4485. Adding 28% for services, supplies and travel would bring it to \$5741 X 12 = \$68,894 per year. Making the necessary adjustments to account for the percentage of time an FTE would be available to do permit work (about 60%), the hourly rate would be about \$57.

The number of hours for processing a complex new application for a major source is about 700 hours, see attached time accounting sheet. The application fee for a new complex major source should, therefore, be about $700 \times 57 = 39,900$. However, since the permit program is still being subsidized by federal funds and some state general fund, the fee for a new major application will be established at \$20,000.

The number of hours for processing a new minor permit is estimated to be about 150 hours. The application processing fee schedule should, therefore, be in the range of $150 \times 57 = 8550$. The schedule will be established at \$4000.

Renewals and modifications which involve an increase in permit limits will be charged 50% of the new source fee.

The permit processing fee for permit renewal applications where no increase in permit limits is requested, can be much less, since an evaluation of additional limits is not necessary

Add a permit processing fee for General Permits which require some form of plan review or water quality evaluation in order to issue the permit. The fee would vary with the complexity of plans required.

REVISED FEES

<u>Permit Filing Fee</u>	Old Fee	New Fee
All Applications	\$50	\$50
<u>Permit Processing Fee</u>		
New Applications		
Major Industry	\$2000	\$20,000
Minor Industry	600	4,000
Agricultural	300	4,000

Renewals or Modifications With Increased Discharges		
Major Industry	1000	10,000
Minor Industry	300	2,000
Agricultural	150	2,000

Renewals Without Increased Discharges		
Major Industry	500	5,000
Minor Industry	200	1,000
Agricultural	100	1,000

Modifications not Involving Permit Limits	75	500
---	----	-----

New General Permits, by permit number:

100, 400, 500, 600 (over 1500 yds per yr), 900, 1000	0	50
200, 300, 1300, 1400, 1500	0	100
1200	0	150

PERMIT PROCESSING FEE REVENUE PROJECTED FOR 1991-92 and 1992-93

Assume 1 new major application per year	@ 20,050	-	20,050
Assume 0 major effluent modification per year	@ -0-	-	-0-
Assume 22 new minor applications per year.	@ 4,050	-	89,100
Assume 5 minor effluent modifications per year	@ 2,050	-	10,250
Assume 20 non-effluent modification per year	@ 550	-	11,000
Assume 100 new General Permittees per year	@ 150	-	15,000
Assume 5 major renewals per year	@ 5,050	-	25,250
Assume 20 minor renewals per year	@ 1,050	-	21,000
Assume 50 General Permit renewals per year	@ 50	-	2,500
	Total		\$194,150

Estimated Fees to be generated under above assumptions.

Permit application processing fees - -	\$194,150
Annual compliance determination fees -	472,225
Total	\$666,375

This is very close to the projected revenue needed for the Governor's recommended budget of \$664,000. The assumptions made included projected revenue from one new industrial major source. That may or may not happen. The assumptions did not include an increase in limits of any existing major industrial source. The projected revenue may vary one way or the other depending on the accuracy of the assumptions made. The revenue projections also do not include the expected permitting activity associated with the new EPA storm water rules. The Department will receive a number of storm water applications (fees of \$200 each). There is no way to estimate how many at this time. In addition, the Department currently has no staff resources to implement the storm water program so it may be necessary to go to the Emergency Board for authorization to hire limited duration fee supported positions to do that work once a better estimate of the necessary resources can be developed.

REQUEST FOR EQC ACTION

Meeting Date: June 14, 1991
Agenda Item: H
Division: Water Quality
Section: Industrial & On-Site

SUBJECT:

Proposed Adoption of Rule Amendments to On-Site Sewage Disposal Fees and Personal Hardship Mobile Home Placements

PURPOSE:

The proposed amended fee schedule will establish maximum fee levels for the various services provided to applicants, allowing the Department of Environmental Quality (Department) to recover reasonable costs for the efficiently conducted minimum services provided.

The technical rule amendment will eliminate a limitation in the current rule that is not justifiable for environmental or public health protection.

ACTION REQUESTED:

- Work Session Discussion
 General Program Background
 Potential Strategy, Policy, or Rules
 Agenda Item ___ for Current Meeting
 Other: (specify)
- Authorize Rulemaking Hearing



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696

Meeting Date: June 14, 1991
Agenda Item: H
Page 2

- | | |
|--|------------------------|
| <input checked="" type="checkbox"/> <u>X</u> Adopt Rules | |
| Proposed Rules | Attachment <u>A</u> |
| Rulemaking Statements | Attachment <u>B</u> |
| Fiscal and Economic Impact Statement | Attachment <u>C</u> |
| Public Notice | Attachment <u>D</u> |
|
 | |
| <input type="checkbox"/> Issue a Contested Case Order | |
| <input type="checkbox"/> Approve a Stipulated Order | |
| <input type="checkbox"/> Enter an Order | |
| Proposed Order | Attachment <u> </u> |
|
 | |
| <input type="checkbox"/> Approve Department Recommendation | |
| <input type="checkbox"/> Variance Request | Attachment <u> </u> |
| <input type="checkbox"/> Exception to Rule | Attachment <u> </u> |
| <input type="checkbox"/> Informational Report | Attachment <u> </u> |
| <input type="checkbox"/> Other: (specify) | Attachment <u> </u> |

DESCRIPTION OF REQUESTED ACTION:

The Department requests that the Commission adopt the rule amendments in Attachment A.

- Rulemaking Hearing was authorized by the Commission on March 11, 1991.
- Notice was published in the Bulletin on April 1, 1991.
- Notice was mailed to all persons on the Department's On-Site Hearing Notice list and to all licensed sewage disposal service businesses.
- Hearings were held in Pendleton, Bend, Roseburg and Portland on April 16, 17, 18, and 19, 1991, respectively.
- Written comments were received through April 19, 1991.
- Testimony was summarized and evaluated, and the proposed rules taken to hearing were modified as discussed in the Alternatives Section.

The rules establish the maximum fees that may be charged applicants requesting site evaluations, permits, licenses and other services by the Department (in the 13 counties where the Department provides these services) or by 23 Agreement counties.

The Governor's recommended budget for 1991-93 for the Department was developed based on projected on-site program workloads and the assumption that fees would be increased to cover these costs. The proposed fee schedule is consistent with the Governor's recommended budget.

AUTHORITY/NEED FOR ACTION:

<input checked="" type="checkbox"/> Required by Statute: <u>ORS 454.745 (4)</u>	Attachment <u>E</u>
Enactment Date: <u>1973</u>	
<input checked="" type="checkbox"/> Statutory Authority: <u>ORS 454.745 (4)</u>	Attachment <u>E</u>
<input type="checkbox"/> Pursuant to Rule: _____	Attachment _____
<input type="checkbox"/> Pursuant to Federal Law/Rule: _____	Attachment _____
<input type="checkbox"/> Other: _____	Attachment _____
<input type="checkbox"/> Time Constraints: _____	

DEVELOPMENTAL BACKGROUND:

<input type="checkbox"/> Advisory Committee Report/Recommendation	Attachment _____
<input checked="" type="checkbox"/> Hearing Officer's Report/Recommendations	Attachment <u>I</u>
<input checked="" type="checkbox"/> Response to Testimony/Comments	Attachment <u>J</u>
<input checked="" type="checkbox"/> Prior EQC Agenda Items:	
March 11, 1991, EQC Agenda Item D, Authorization for Public Hearings (without attachments)	Attachment <u>K</u>
March 11, 1991, Addendum to EQC Agenda Item D, (without attachments)	Attachment <u>L</u>
<input type="checkbox"/> Other Related Reports/Rules/Statutes:	Attachment _____
<input checked="" type="checkbox"/> Supplemental Background Information:	
Estimated DEQ Fee Revenue for FY 92, Under Existing Fee Schedule	Attachment <u>F</u>
Estimated DEQ FEE Revenue for FY 92, Under Proposed Fee Schedule	Attachment <u>G</u>
Brief Description of On-Site Program Objectives and Responsibilities	Attachment <u>H</u>
Rational Used to Establish Fee Levels	Attachment <u>M</u>

Meeting Date: June 14, 1991
Agenda Item: H
Page 4

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

The increase in fees directly affects all persons that submit applications to the Department for permits, licenses and other services. The fees are the major source of funding to offset costs associated with maintaining the technical and support staff necessary to provide the services. The higher fees will fund additional staff positions to improve response times to applications, and thereby reduce delays to the public.

Agreement counties will collect from applicants the increased surcharge applicable to each application they receive, and remit the collected surcharges to the Department as stipulated in the agreement. This should have no appreciable effect on these offices because they have been collecting the application surcharges for the Department since 1981. Each agreement county will also have the ability to adjust its on-site fee schedule, provided the adjustments are not contrary to the intergovernmental agreement with the Department.

A limitation within the rule concerning personal hardship mobile home placements restricts the occupancy to family members suffering physical or mental impairment. Staff believe this restriction is unduly burdensome, and is not justifiable for environmental protection or public health concerns. The proposed amendment will eliminate this restriction.

PROGRAM CONSIDERATIONS:

Application fees for licenses, permits and other services are the major source of funding used to offset costs associated with maintaining technical and support staff necessary to conduct the direct public service activities in 13 sparsely populated counties. Other aspects of the program, including administration, planning, technical assistance, enforcement and oversight, are statewide program functions that are primarily funded through license fees and application surcharges. The Governor's proposed budget for the on-site program projects fee revenue needs of approximately \$1.7 for the biennium. This will maintain the existing program and add 2.33 FTE's to provide a better level of service to the public and agreement counties. Revenue projections under the existing and proposed fee schedules are found in Attachments F and G.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

1. Adopt the proposed amendments as originally taken to hearing.
2. Adopt the proposed amendments with the modifications that resulted from hearing testimony, as presented in Attachment A.

The fees originally proposed for two alternative systems (pressure systems and tile de-watering systems) were based on the expectation that only one pre-cover inspection would be needed to verify that construction was consistent with permit conditions. Upon reexamination, staff found it commonly takes two pre-cover inspections, and the average time spent would therefor increase from 4.8 hours to 6.5 hours. The proposed fees for these two systems were therefor increased from \$245 to \$350.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends the Commission adopt the rule amendments as presented in Attachment A (Alternative 2).

- Consistent with statutory direction.
- Provides basis for Agreement Counties to recover costs and continue their service.
- Provides the ability for the Department to recover its costs in implementing the program.
- Responds to suggestions received from the public.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

Establishing fees as a revenue source for funding program expenditures is consistent with the strategic plan, agency policy, and legislative policy.

Meeting Date: June 14, 1991
Agenda Item: H
Page 6

INTENDED FOLLOWUP ACTIONS:


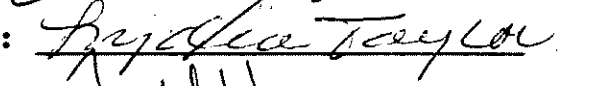

The 1989 legislature included a budget note requiring that fee increases be reviewed by the Ways and Means Committee prior to taking effect. The proposed fees have been submitted to the Transportation Subcommittee of Ways and Means, but no official action has been taken on the budget yet. If the Environmental Quality Commission approves these proposed rules, they will not be filed with the Secretary of State until the Ways and Means Committee has approved the budget. If the Ways and Means Committee makes substantial reductions in the budget which result in a lower fee being required, the Department will return to the Commission for rule revision.

Approved:

Section:

Division:

Director:

Report Prepared By: Sherman O. Olson, Jr.

Phone: 229-6443

Date Prepared: May 11, 1991

SOO:crw
IW\WC8\WC8404
5/11/91

OREGON ADMINISTRATIVE RULES
340-71-140

NOTE:

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

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

340-71-140 FEES -- GENERAL.

- (1) Except as provided in section (5) of this rule, the following nonrefundable fees are required to accompany applications for site evaluations, permits, licenses and services provided by the Department.

ON-SITE SEWAGE DISPOSAL SYSTEMS	MAXIMUM FEE
(a) New Site Evaluation:	
(A) Single Family Dwelling:	
(i) First Lot.....	{ \$160 } <u>\$245</u>
(ii) Each Additional Lot Evaluated During Initial Visit	{ \$130 } <u>\$205</u>
(B) Commercial Facility System:	
(i) For First One Thousand (1000) Gallons Projected Daily Sewage Flow	{ \$160 } <u>\$245</u>
(ii) Plus For Each Five Hundred (500) Gallons or Part Thereof Above One Thousand (1000) Gallons, for Projected Daily Sewage Flows up to Five Thousand (5,000) Gallons.....	{ \$-50 } <u>\$ 75</u>
(C) Site Evaluation Report Review	{ \$100 } <u>\$200</u>
(D) Fees for site evaluation applications made to an agreement county shall be in accordance with that county's fee schedule.	
(E) Each fee paid for a site evaluation report entitles the applicant to as many site inspections on a single	

parcel or lot as are necessary to determine site suitability for a single system. The applicant may request additional site inspections within ninety (90) days of the initial site evaluation, at no extra cost.

- (F) Separate fees shall be required if site inspections are to determine site suitability for more than one (1) system on a single parcel of land.

(b) Construction-Installation Permit:

- (A) For First One Thousand (1000) Gallons Projected Daily Sewage Flow:

- (i) Standard On-Site System {\$160} \$245

- (ii) Alternative System:

(I) Aerobic System	{\$160}	<u>\$245</u>
(II) Capping Fill	{\$275}	<u>\$415</u>
(III) Cesspool	{\$160}	<u>\$245</u>
(IV) Disposal Trenches in		
Saprolite	{\$160}	<u>\$245</u>
(V) Evapotranspiration-Absorption.	{\$160}	<u>\$245</u>
(VI) Gray Water Waste Disposal		
Sump	{ \$ -80 }	<u>\$120</u>
(VII) Holding Tank	{\$160}	<u>\$245</u>
(VIII) Pressure Distribution	{\$160}	<u>\$350</u>
(IX) Redundant	{\$160}	<u>\$245</u>
(X) Sand Filter	{\$295}	<u>\$445</u>
(XI) Seepage Pit	{\$160}	<u>\$245</u>
(XII) Seepage Trench	{\$160}	<u>\$245</u>
(XIII) Steep Slope	{\$160}	<u>\$245</u>
(XIV) Tile Dewatering	{\$160}	<u>\$350</u>

~~{(iii) The permit fee required for standard, cesspool, disposal trenches in saprolite, seepage pit, steep slope and seepage trench systems may be reduced to one hundred five dollars (\$105) providing the permit application is submitted to the Agent within six (6) months of the site evaluation report date, the system will serve a single family dwelling, and a site visit is not required before issuance of the permit.}~~

(iii) At the discretion of the Agent, the permittee may be assessed a reinspection fee, not to exceed \$25, when a precover inspection correction notice requires correction of improper construction and, at a subsequent inspection, the Agent finds system construction deficiencies have not

been corrected. The Agent may elect not to make further precover inspections until the reinspection fee is paid.

(iv) With the exceptions of sand filter and pressure distribution systems, a \$25 fee may be added to all permits that specify the use of a pump or dosing siphon.

- (B) For systems with projected daily sewage flows greater than one thousand (1,000) gallons, the Construction-Installation permit fee shall be equal to the fee required in OAR 340-71-140 (1)(b)(A) plus ~~[\$10]~~ \$15 for each five hundred (500) gallons or part thereof above one thousand (1,000) gallons.

NOTE: Fees for construction permits for systems with projected daily sewage flows greater than five thousand (5,000) gallons shall be in accordance with the fee schedule for WPCF permits.

(C) Commercial Facility System, Plan Review:

- (i) For a system with a projected daily sewage flow of less than six hundred (600) gallons, the cost of plan review is included in the permit application fee.
- (ii) For a system with a projected daily sewage flow of six hundred (600) gallons, but not more than one thousand (1,000) gallons
projected daily sewage flow ~~[\$-60]~~ \$100
- (iii) Plus for each five hundred (500) gallons or part thereof above one thousand (1,000) gallons, to a maximum sewage flow limit of five thousand (5,000) gallons
per day ~~[\$-15]~~ \$ 25
- (iv) Plan review for systems with projected sewage flows greater than five thousand (5,000) gallons per day shall be pursuant to OAR 340, Division 52.

(D) Permit Renewal:

- (i) If Field Visit Required ~~[\$100]~~ \$150
- (ii) No Field Visit Required..... ~~[\$-55]~~ \$ 85

NOTE: Renewal of a permit may be granted to the original permittee if an application for permit renewal is filed prior to the original permit expiration date. Refer to OAR 340-71-160(10).

- (E) Alteration Permit {~~\$140~~} \$245
- (F) Repair Permit:
 - (i) Single Family Dwelling:
 - (I) Major {~~\$-75~~} \$115
 - (II) Minor {~~\$-50~~} \$ 75
 - (ii) Commercial Facility: {--}
 - (I) Major -- The appropriate fees identified in paragraphs (1)(b)(A), {and} (B), and (C) of this rule appl{ies}y.
 - (II) Minor \$ 75
- (G) Permit Denial Review {~~\$100~~} \$200
- (c) Authorization Notice:
 - (A) If Field Visit Required {~~\$100~~} \$150
 - (B) No Field Visit Required {~~\$-55~~} \$ 85
 - (C) Authorization Notice Denial Review {~~\$100~~} \$200
- (d) Annual Evaluation of Alternative System (Where Required) {~~\$100~~} \$150
- (e) Annual Evaluation of Large System (2501 to 5000 GPD) {~~\$100~~} \$150
- (f) Annual Evaluation of Temporary or Hardship Mobile Home..... {~~\$-60~~} \$ 90
- (g) Variance to On-Site System Rules \$225

NOTE: The variance application fee may be waived if the applicant meets the requirements of OAR 340-71-415(5).
- (h) Rural Area Variance to Standard Subsurface Rules:
 - (A) Site Evaluation {~~\$160~~} \$245

NOTE: In the event there is on file a site evaluation report for that parcel that is less than ninety (90) days old, the site evaluation fee shall be waived.

(B) Construction-Installation Permit -- The appropriate fee identified in subsection (1)(b) of this rule applies.

(i) Sewage Disposal Service:

(A) Annual Business License {~~\$150~~} \$ 175

~~{EXCEPTION: --The application fee for a license valid during the period July 1, 1983 through June 30, 1984 shall be \$100.}~~

(B) Transfer of or Amendments to License {~~\$-75~~} \$ 100

(C) Reinstatement of Suspended License {~~\$100~~} \$ 125

(D) Pumper Truck Inspection, First Vehicle:

(i) Each Inspection..... {~~\$-35~~} \$ 50

(ii) Each Additional Vehicle, Each Inspection..... {~~\$-25~~} \$ 35

(j) Experimental Systems: Permit..... {~~\$100~~} \$ 1,000

(k) Existing System Evaluation Report {~~\$100~~} \$ 150

NOTE: The fee shall not be charged for an evaluation report on any proposed repair, alteration or extension of an existing system.

(2) Contract County Fee Schedules. Pursuant to ORS 454.745(4), fee schedules which exceed maximum fees in ORS 454.745(1), and section (1) of this rule, are established for contract counties as follows:

(a) Multnomah County: See OAR 340-72-070.

(b) Jackson County: See OAR 340-72-080.

(c) Linn County: See OAR 340-72-090.

(3) Contract County Fee Schedules, General:

(a) Each county having an agreement with the Department under ORS 454.725 shall adopt a fee schedule for services rendered and permits ~~{and licenses}~~ to be issued.

- (b) A copy of the fee schedule and any subsequent amendments to the schedule shall be forwarded to the Department.
- (c) Fees shall not:
 - (A) Exceed actual costs for efficiently conducted services; or
 - (B) Exceed the maximum established in section (1) of this rule, unless approved by the Commission pursuant to ORS 454.745(4).
- (4) Surcharge. In order to offset a portion of the administrative costs of the statewide on-site sewage disposal program, a surcharge for each activity, as set forth in the following schedule, shall be levied by the Department and by each Agreement County. Proceeds from surcharges collected by the Department and Agreement Counties shall be accounted for separately. Each Agreement County shall forward the proceeds to the Department as negotiated in the memorandum of agreement (contract) between the county and the Department.

Activity	Surcharge
(a) Site evaluation, for each site examined, based on a projected flow of:	
A. 1,000 gallons or less	[\$-15] <u>\$ 20</u>
B. 1,001 gallons to 2,000 gallons	[\$-30] <u>\$ 40</u>
C. 2,001 gallons to 3,000 gallons	[\$-45] <u>\$ 60</u>
D. 3,001 gallons to 4,000 gallons	[\$-60] <u>\$ 80</u>
E. 4,001 gallons or more	[\$-75] <u>\$100</u>
(b) Construction-Installation Permit	[\$--5] <u>\$ 10</u>
(c) Repair Permit	[\$--5] <u>\$ 10</u>
(d) Alteration Permit	[\$--5] <u>\$ 10</u>
(e) Authorization Notice	[\$--5] <u>\$ 10</u>
<u>(f) Existing System Evaluation Report.....</u>	<u>\$ 10</u>

- (5) Refunds. The Agent may refund a fee accompanying an application if the applicant withdraws the application before the Agent has done any field work or other substantial review of the application.

Amend OAR 340-71-205(8) as follows:

340-71-205 AUTHORIZATION TO USE EXISTING SYSTEMS.

- (1) For the purpose of these rules, "Authorization Notice" means a written document issued by the Agent which establishes that an existing on-site sewage disposal system appears adequate to serve the purpose for which a particular application is made. Applications for Authorization Notices shall conform to requirements of OAR 340-71-160(2) and (4).
- (2) Authorization Notice Required. No Person shall place into service, change the use of, or increase the projected daily sewage flow into an existing on-site sewage disposal system without obtaining an Authorization Notice, Construction-Installation Permit or Alteration Permit as appropriate.

EXCEPTIONS:

- a- An Authorization Notice is not required when there is a change in use (replacement of mobile homes or recreational vehicles with similar units) in mobile home parks or recreational vehicle facilities.
 - b- An Authorization Notice is not required for placing into service a previously unused system for which a Certificate of Satisfactory Completion has been issued within one (1) year of the date such system is placed into service, providing the projected daily sewage flow does not exceed the design flow.
- (3) For placing into service or for changes in the use of an existing on-site sewage disposal system where no increase in sewage flow is projected, or where the design flow is not exceeded; an Authorization Notice valid for a period not to exceed one (1) year shall be issued if:
 - (a) The existing system is not failing; and
 - (b) All set-backs between the existing system and the structure can be maintained; and
 - (c) In the opinion of the Agent the proposed use would not create a public health hazard on the ground surface or in surface public waters.
 - (4) If the conditions of section (3) of this rule cannot be met, an Authorization Notice shall be withheld until such time as the necessary alterations and/or repairs to the system are made.
 - (5) For changes in the use of a system where projected daily sewage flow would be increased by not more than three hundred (300)

gallons beyond the design capacity or by not more than fifty (50) percent of the design capacity for the system, whichever is less; an Authorization Notice valid for a period not to exceed one (1) year shall be issued if:

- (a) The existing system is shown not to be failing; and
 - (b) All set-backs between the existing system and the structure can be maintained; and
 - (c) Sufficient area exists so that a complete replacement area meeting all requirements of these rules (except those portions relating to soil conditions and groundwater) is available; and
 - (d) In the opinion of the Agent the proposed increase would not create a public health hazard or water pollution.
- (6) Only one (1) Authorization Notice for an increase up to three hundred (300) gallons beyond the design capacity, or increased by not more than fifty (50) percent of the design capacity, whichever is less, will be allowed per system.
- (7) For changes in the use of a system where projected daily sewage flows would be increased by more than three hundred (300) gallons beyond the design capacity, or increased by more than fifty (50) percent of the design capacity of the system, whichever is less, a Construction-Installation Permit shall be obtained. Refer to rule 340-71-210.
- (8) Personal Hardship:
- (a) The Agent may allow a mobile home to use an existing system serving another dwelling, in order to provide housing for a a person ~~{family-member}~~ suffering hardship or for an individual providing care for such a person, by issuing an Authorization Notice, if:
 - (A) The Agent receives satisfactory evidence which indicates that a person ~~{the-family-member}~~ is suffering physical or mental impairment, infirmity, or is otherwise disabled (a hardship approval issued under local planning ordinances shall be accepted as satisfactory evidence); and
 - (B) The system is not failing; and
 - (C) The application is for a mobile home; and
 - (D) Evidence is provided that a hardship mobile home placement is allowed on the subject property by the governmental agency that regulates zoning, land use planning, and/or building.

(b) The Authorization Notice shall remain in effect for a specified period, not to exceed cessation of the hardship. The Authorization Notice is renewable on an annual or biennial basis. The Agent shall impose conditions in the Authorization Notice which are necessary to assure protection of public health.

(9) Temporary Placement:

(a) The Agent may allow a mobile home to use an existing system serving another dwelling in order to provide temporary housing for a family member in need, and may issue an Authorization Notice provided:

(A) The Agent receives evidence that the family member is in need of temporary housing; and

(B) The system is not failing; and

(C) A full system replacement area is available; and

(D) Evidence is provided that a temporary mobile home placement is allowed on the subject property by the governmental agency that regulates zoning, land use planning, and/or building.

(b) The Authorization Notice shall authorize use for no more than two (2) years and is not renewable. The Agent shall impose conditions in the Authorization Notice necessary to assure protection of public health. If the system fails during the temporary placement and additional replacement area is no longer available, the mobile home shall be removed from the property.

(10) An Authorization Notice denied by the Agent shall be reviewed at the request of the applicant. The application for review shall be submitted to the Department in writing within thirty (30) days of the authorization notice denial, and be accompanied by the denial review fee. The denial review shall be conducted and a report prepared by the Department.

STATEMENT OF NEED FOR RULE MAKING

Pursuant to ORS 183.335(2), this statement provides information on the Environmental Quality Commission's intended action to adopt a rule.

(1) Legal Authority:

ORS 454.745(4) provides that the Commission, at the request of the Director or any Contract Agent, may by rule increase fees above the maximum levels established in Subsection (1) of ORS 454.745. Fee increases permitted by the Commission shall be based upon actual costs for efficiently conducted minimum services as developed by the Director or Contract Agent.

ORS 454.625, which authorizes the Environmental Quality Commission to adopt rules pertaining to on-site sewage disposal.

(2) Need for the Rule:

The Governor's recommended budget for the on-site sewage disposal program projects that slightly more than \$1.7 million in fee revenues must be generated to fund the fee supported portion of the program. Based on estimated program activities during the 91-93 biennium, fee revenues using the current schedule of maximum fees are expected to provide about \$1.1 million. To raise the estimated \$0.6 million additional in fees necessary to fund the program, the rule establishing the fee schedule must be amended.

The Department believes the personal hardship mobile home placement allowed through the issuance of an Authorization Notice is too restrictive because it limits occupancy of the mobile home to a family member suffering physical or mental impairment, infirmity or other disability. It is reasonable to expect that the care provider assisting the person suffering hardship may need to reside in the mobile home, and/or that the care provider may not be a family member. The proposed rule amendment would eliminate these restrictions.

(3) Principle Documents Relied Upon in This Rulemaking:

- (a) Oregon Revised Statute 454.745(4).
- (b) Oregon Administrative Rule 340-71-140.

- (c) Proposed rule establishing maximum fees the Department may charge for specific on-site activities.
- (d) Letter from Richard L. Polson dated December 21, 1990.
- (e) EQC Staff Report, Agenda Item I, March 11, 1988, EQC Meeting
- (f) Portion of 1991-93 Governor's Recommended Budget Concerning Subsurface Sewage Disposal Fee Revenue.
- (g) Monthly On-Site Activity Reports From the Department's Regional and Branch Offices.
- (h) Summary of OSS Field Services & Fiscal Office Revenue for FY '89, FY '90, and FY '91.
- (i) Letter from Larry L. Campbell, Oregon House of Representatives, dated August 31, 1990.

LAND USE COMPATIBILITY STATEMENT

The proposed rule establishing maximum fees for on-site services provided by the Department does not affect land use as defined in the Department's coordination program approved by the Land Conservation and Development Commission.

The Department has concluded that the proposed rule amendment concerning personal hardship mobile home placements conforms with Statewide Planning Goals. The applicant for a Hardship Authorization Notice is required by rule to provide a favorable Land Use Compatibility Statement from the affected jurisdiction to demonstrate compatibility with the local comprehensive plan.

Public comment on any land issue involved is welcome and may be submitted in the same manner as indicated for testimony in the hearing notice. It is requested that local, state and federal agencies review the proposed amendments and comment on possible conflicts with their programs affecting land use and with statewide Planning Goals and within their expertise and jurisdiction.

The Department of Environmental Quality intends to ask the Department of Land Conservation and Development to mediate any appropriate conflicts brought to their attention by local, state, or federal authorities.

FISCAL AND ECONOMIC IMPACT

The proposed fee maximums for on-site services will result in higher fees to most applicants. Although the increases range from 17% to 1000%, most of the fees will increase by approximately 50% above the fee maximums established by the Environmental Quality Commission on May 11, 1988. The fee for a repair permit to correct a minor sewage disposal system problem (for a system serving other than a single family dwelling) is being reduced.

Impact To The General Public. Individuals will see a direct increase in the fees they pay for on-site services. In counties the Department provides field services, the cost of a site evaluation report and a standard system construction-installation permit will both rise by \$90. Fees for other types of services the public may submit applications for will be increased by amounts ranging from \$30 (minor system repair permit) to \$900 (experimental system permit). Also, permit holders that do not correct construction deficiencies found during pre-cover inspections that causes additional site visits by staff may be billed \$25 to defray the revisit costs incurred by the Department. Systems using effluent pumps or siphons, other than sand filter or pressurized systems, may have an additional \$25 added to the normal permit fee. In counties where the Department has delegated program implementation to local units of government, the direct cost increase for each application will be \$5. However, because each delegated office may increase the fees they charge to the maximum limit established for the Department, applicants in those counties may be indirectly impacted by the Department's new fee schedule.

The proposed amendment to the rule addressing personal hardship mobile home placements may provide an economic savings to those members of the public that previously were unable to qualify with the conditions imposed by the rule. Because the care provider and the person suffering physical or mental impairment could reside on the same property in separate dwellings, the overall costs for care may be less.

Impact On Small Business. The fee changes may affect small businesses both directly and indirectly. Those that submit applications for on-site activities to the Department will be subjected to the same costs as the public. Sewage disposal service companies will need to pay higher fees for the annual licenses they must obtain from the Department. The increase

will be \$25 for each license, and \$10 to \$15 for each pumping vehicle. These companies may be indirectly affected if the \$25 revisit fee is passed down to them because of uncorrected construction deficiencies. Some businesses may have bid for construction projects without considering higher application fees, and may have to pay the difference without compensation. The new fee schedule reduces the permit cost to repair a sewage disposal system for some businesses, if the repair is considered to be minor.

The proposed rule amendment addressing personal hardship mobile home placements may provide a limited number of jobs for businesses that provide services associated with moving mobile homes and setting them up for occupancy. Some caregiving facilities, such as but not limited to nursing homes and institutions, may lose some patients and, therefore, experience a slight decline in revenue.

Impacts On Large Businesses. The proposed amendments will affect large businesses to the same extent as the public and small businesses.

Impact On Local Governments. The fee changes will affect local governments to the same extent as the public and small businesses. However, those local governments having an intergovernmental agreement with the Department, to implement portions of the on-site program within specific counties, will collect from applicants the increased surcharge applicable to each application they receive, and remit the collected surcharges to the Department consistent with the agreement. This should have no appreciable affect on these offices because they have been collecting the application surcharge for the Department since 1981. An indirect impact is that each agreement office will have the ability to adjust its on-site fee schedule, provided the adjustments are not contrary to the intergovernmental agreement with the Department. The proposed amendment concerning personal hardship mobile home placements may result in a slight increase in the number of applications to be reviewed and processed by local governments. Costs associated with this activity are expected to be offset by a fee for service.

Impact On State Agencies. The new fee schedule will generate additional revenues the Department of Environmental Quality will use to offset expenses incurred by the Department in its administration and implementation of the on-site sewage treatment and disposal program. The majority of the new revenues will provide funding for additional staff positions that are necessary to accomplish the program objectives. The Department may see a slight increase in applications due to the proposed amendment concerning personal hardship mobile

home placements, with costs to the Department offset by a fee for service. Other state agencies will be affected by the fee amendments to the same extent as large and small businesses and the public. Most agencies are not expected to be impacted by the proposed revision to the personal hardship mobile home placement rule. However, there may be a slight increase in workload with agencies that are involved directly or indirectly with activities associated with mobile home placements.

A CHANCE TO COMMENT ON...

PROPOSED INCREASE IN THE ON-SITE SEWAGE DISPOSAL PROGRAM APPLICATION FEES

Notice Issued: March 11, 1991
Comments Due: April 19, 1991

- WHO IS AFFECTED:** Persons submitting applications for on-site sewage disposal activities and sewage disposal service licenses.
- WHAT IS PROPOSED:** All on-site sewage disposal program fees, including surcharges, are being increased, with two exceptions. This will provide the revenue necessary to fund the fee-supported portion of the program. The 1991-93 Governor's recommended budget estimates that about \$1.7 million in fee revenues must be generated to provide for this fund base. Also, additional fees are proposed for systems requiring pumps or siphons, and when uncorrected construction deficiencies cause additional system pre-cover inspection visits by staff. A surcharge is proposed for existing system evaluation report applications. The Department proposes to eliminate the "family member" restriction concerning personal hardship mobile home placements allowed by Authorization Notice issuance.
- WHAT ARE THE HIGHLIGHTS:** Many fees are being increased by approximately 50%. Some fees are proposed to be increased by more than 50% to more accurately reflect overall costs to the Department in providing the service. The surcharge increment on each application is proposed to be increased by \$5.
- HOW TO COMMENT:** Public hearings are scheduled at the following locations on the dates and times indicated:

PENDLETON

State Office Building
3rd Floor Conference Room
700 S.E. Emigrant
Pendleton, Oregon
April 16, 1991, at 10 am

BEND

Cascade Natural Gas Bldg.
Conference Room
334 N.E. Hawthorne
Bend, Oregon
April 17, 1991, at 10 am



FOR FURTHER INFORMATION:

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

ROSEBURG

State Office Building
Conference Room B
1937 W. Harvard Blvd.
Roseburg, Oregon
April 18, 1991, at 10 am

PORTLAND

Executive Building
Conference Room 3-A
811 S.W. Sixth Avenue
Portland, Oregon
April 19, 1991, at 10 am

A Department of Environmental Quality staff member will be appointed to preside over and conduct each of the hearings. Written comments should be sent to DEQ, Water Quality Division, Industrial and On-Site Waste Water Section, 811 S.W. Sixth Avenue, Portland, Oregon 97204, but must be received by 5 p.m. on April 19, 1991.

All requests for information or copies of the proposed amendments should be directed to Mr. Sherman Olson, Industrial and On-Site Waste Water Section, 229-6443 or toll free, 1-800-452-4011.

WHAT IS THE
NEXT STEP:

After reviewing all the public testimony and making appropriate changes, the fee schedule will be presented to the Environmental Quality Commission for adoption at their regular meeting in June, contingent upon legislative approval of the Governor's recommended budget for the on-site program.

454.705

PUBLIC HEALTH AND SAFETY

section expire on July 1 next following the date of issuance. (1973 c.335 §217; 1977 c.928 §2; 1985 c.16 §3)

454.705 Bond; content; action on bond; limit on surety's liability; notice of bond.

(1) An applicant for a license required by ORS 454.695 shall execute a bond in the penal sum of \$2,500 in favor of the State of Oregon. The bond shall be executed by the applicant as principal and by a surety company authorized to transact a surety business within the State of Oregon as surety.

(2) The bond shall be filed with the Department of Environmental Quality and shall provide that:

(a) In performing sewage disposal services, the applicant shall comply with the provisions of ORS 454.605 to 454.745 and with the rules of the Environmental Quality Commission regarding sewage disposal services; and

(b) Any person injured by a failure of the applicant to comply with ORS 454.605 to 454.745 and with the rules of the commission regarding sewage disposal services shall have a right of action on the bond in the name of the person, provided that written claim of such right of action shall be made to the principal or the surety company within two years after the services have been performed; and

(c) The maximum aggregate liability of the surety on the bond shall be \$2,500.

(3) Every person licensed pursuant to ORS 454.695 shall deliver to each person for whom services requiring such license are performed, prior to the completion of such services, a written notice of the name and address of the surety company which has executed the bond required by this section and of the rights of the recipient of such services as provided by subsection (2) of this section. (1973 c.335 §219; 1975 c.171 §1)

454.710 Deposit in lieu of bond. In lieu of the surety bond required by ORS 454.705, an applicant for a license required by ORS 454.695 may deposit, under the same terms and conditions as when a bond is filed, the equivalent value in cash or negotiable securities of a character approved by the State Treasurer. The deposit is to be made in a bank or trust company for the benefit of the department. Interest on deposited funds or securities shall accrue to the depositor. (1981 c.148 §2)

454.715 Suspension or revocation of license. Subject to ORS 183.310 to 183.550, the Department of Environmental Quality at any time may suspend or revoke any license issued pursuant to ORS 454.695 if it finds:

(1) A material misrepresentation or false statement in the application for the license.

(2) Failure to comply with the applicable provisions of this chapter.

(3) Violation of any rule of the Environmental Quality Commission regarding sewage disposal services. (1973 c.335 §219)

454.725 Contracts with local governments; disbursement of fees to local governments. (1) The Department of Environmental Quality may enter into agreements with local units of government for the local units to perform the duties of the department under ORS 454.635, 454.655, 454.665 and 454.695.

(2) If a fee is collected by a local unit of government performing duties under subsection (1) of this section, the department may disburse all or part thereof to the local unit.

(3) The Department of Environmental Quality may enter into agreements with local units of government when the local units so request for the local units to perform the variance duties of the department under ORS 454.657 and 454.660 subject to variance criteria specified in the agreement by the department. Each county performing variance duties under an agreement may set and collect a nonrefundable variance application fee as provided in ORS 454.662. A fee collected by a county under this subsection shall not exceed the county's cost of performing the variance duties of the department. (1973 c.335 §219a; 1975 c.167 §9; 1975 c.309 §5; 1979 c.59 §3)

454.735 Designation of local official to receive applications and fees. The Department of Environmental Quality shall designate an appropriate official in each county who shall be authorized to receive applications and fees required by ORS 454.605 to 454.745. Such receipt shall be considered the official receipt of the application by the department. (1973 c.335 §219b)

454.745 Permit, service and license fees; maximum fees; refund. (1) Fees, not exceeding the following amounts, are established for services rendered and for permits and licenses issued under ORS 454.655 and 454.695 in accordance with the following schedule:

Subsurface or Alternative Sewage Disposal System	Maximum Fee
New Site Evaluation; first lot	\$120
Each additional lot evaluated while on site	\$100
Construction Installation Permit (with favorable evaluation report)	\$40
Alteration Permit	\$25
Repair Permit	\$25
Extension Permit	\$25
Sewage Disposal Service	
Business License	\$100
Pumper Truck Inspection	\$25
Evaluation of Existing	

System Adequacy	\$40
Annual Evaluation of Alternative System (where required)	\$40
Annual Evaluation of Temporary Manufactured Dwelling	\$25

(2) No fee shall be charged for an evaluation report requested on any proposed repair, alteration or extension of an existing subsurface sewage disposal system, alternative sewage disposal system or part thereof.

(3) Notwithstanding any other provision of this section, no contract provided for under ORS 454.725 shall be entered into or continued when the total amount of fees collected by the local unit of government exceeds the total cost of the program for providing the services rendered and permits and licenses issued under this section.

(4) Notwithstanding the maximum fees established in subsection (1) of this section, the Environmental Quality Commission, upon request of the director or of any county which pursuant to ORS 454.725 has entered into an agreement with the Department of Environmental Quality, may by rule increase maximum fees effective July 1, 1980, above the maximum levels established in subsection (1) of this section. Fee increases permitted by the commission shall be based upon actual costs for efficiently conducted minimum services as developed by the director or contract county. In addition to the fees listed in subsection (1) of this section, with approval of the Environmental Quality Commission, any agreement county may adopt fee schedules for services related to this program which are not specifically listed in subsection (1) of this section.

(5) Notwithstanding the requirements of ORS 454.655 (3), the department or its contract agent may refund a fee accompanying an application for a permit pursuant to ORS 454.655 or for a report pursuant to ORS 454.755 if the applicant withdraws the application before the department or its contract agent has done any field work or other substantial review of the application. [1973 c.333 §220; 1974 s.s. c.30 §3; 1975 c.167 §10; 1975 c.607 §33; 1979 c.591 §2]

~~454.755 Fees for certain reports on sewage disposal. (1) Any person, upon application for any of the following actions by the Department of Environmental Quality, shall pay to the department a nonrefundable fee in the amount required for each lot or parcel:~~

~~(a) A report of evaluation of site suitability for a subsurface sewage disposal system, alternative sewage disposal system or a part thereof, pursuant to ORS 454.655; or~~

~~(b) A report of evaluation of adequacy of sewage disposal method required prior to~~

~~the approval of a plat of a subdivision, pursuant to ORS 92.090 (5)(c).~~

~~(2) Any person may request an evaluation report on any proposed repair, alteration or extension of an existing subsurface sewage disposal system, alternative sewage disposal system or part thereof, including but not limited to any repair, alteration or extension described in ORS 454.675. The department shall conduct such evaluation and issue a report of its findings without charge to the person requesting such evaluation.~~

~~(3) The fee paid for a report of evaluation of site suitability pursuant to paragraph (a) of subsection (1) of this section shall entitle the applicant to as many site inspections as is necessary within 90 days from the date of the first site inspection to determine site suitability for a single home site. The department may require separate fees if it determines that the site inspections are for the purpose of determining site suitability for more than one home site. [1974 s.s. c.30 §2; 1974 s.s. c.74 §4; 1975 c.167 §11; 1975 c.607 §34]~~

ONSITE DISPOSAL ALTERNATIVES

~~454.775 Policy. It is the public policy of the State of Oregon to encourage development and application of alternatives to the septic tank and drainfield system for onsite disposal of sewage consistent with protection of the public health and safety and waters of the state. (1979 c.189 §1)~~

~~454.780 Recirculating sand filter permitted; commission rules. Notwithstanding ORS 454.615, the Environmental Quality Commission shall adopt rules permitting the installation of the recirculating sand filter, or variations thereof, as a standard alternative to the septic tank and drainfield, not later than January 1, 1980. Such rules shall provide standards for construction, installation, maintenance and periodic inspection of such systems, consistent with the public health and safety and protection of the waters of the state. (1979 c.189 §2)~~

~~454.785 [1974 s.s. c.30 §4; repealed by 1975 c.309 §6]~~

REQUIRED CONNECTIONS

~~454.805 Assessment for installation costs. (1) When a municipality requires property owners to connect their homes and multifamily dwellings to the sewer system of the municipality, the municipality may assess the installation costs for which the municipality provides financing against the affected properties in the same manner that costs of local improvements are assessed against benefited properties. Such assessments shall have the same lien status and be foreclosable in the same manner as other assessments levied under ORS chapter 223 or the charter~~

Attachment F

Estimated DEQ Fee Revenue For FY 92, Under Existing Fee Schedule

	APPLICATIONS	REVENUE
SITE EVALUATIONS		
1st Lot.....	660.....	\$ 105,600
Additional Lots.....	108.....	\$ 14,040
Commercial.....	7.....	\$ 1,120
CONSTRUCTION PERMITS		
Standard System.....	504.....	\$ 65,955
Capping Fill System.....	14.....	\$ 3,850
Holding Tank System.....	8.....	\$ 1,280
Pres. Dist. System.....	30.....	\$ 4,800
Sand Filter System.....	46.....	\$ 13,570
Other Alt. Systems.....	6.....	\$ 960
Alteration Permit.....	24.....	\$ 3,360
REPAIR PERMIT		
Single Family.....	311.....	\$ 17,105
Commercial.....	11.....	\$ 1,760
RENEWAL PERMIT		
Field Visit.....	8.....	\$ 800
No Field Visit.....	26.....	\$ 1,430
AUTHORIZATION NOTICE		
Field Visit.....	352.....	\$ 35,200
No Field Visit.....	38.....	\$ 2,090
PLAN REVIEW.....	7.....	\$ 420
EXISTING SYSTEM EVALUATION.....	28.....	\$ 2,800
DENIAL REVIEW.....	3.....	\$ 300
PUMPER TRUCK INSPECTION.....	32.....	\$ 960
ANNUAL INSPECTIONS.....	21.....	\$ 2,100
VARIANCE APPLICATIONS.....	40.....	\$ 9,000
S.D.S. LICENSES.....	900.....	\$ 139,000
SURCHARGES.....		\$ 138,515
<hr/>		
TOTAL.....		\$ 566,015
Projected Fee Revenue for the 91-93 Biennium....		\$ 1,132,030

Attachment G

Estimated DEQ Fee Revenue For FY 92, Under Proposed Fee Schedule

	APPLICATIONS	REVENUE
SITE EVALUATIONS		
1st Lot.....	660.....	\$ 161,700
Additional Lots.....	108.....	\$ 22,140
Commercial.....	7.....	\$ 1,715
CONSTRUCTION PERMITS		
Standard System.....	504.....	\$ 123,480
Capping Fill System.....	14.....	\$ 5,810
Holding Tank System.....	8.....	\$ 1,960
Pres. Dist. System.....	30.....	\$ 10,500
Sand Filter System.....	46.....	\$ 20,470
Other Alt. Systems.....	6.....	\$ 1,470
Alteration Permit.....	24.....	\$ 5,880
REPAIR PERMIT		
Single Family.....	311.....	\$ 27,990
Commercial.....	11.....	\$ 2,695
RENEWAL PERMIT		
Field Visit.....	8.....	\$ 1,200
No Field Visit.....	26.....	\$ 2,210
AUTHORIZATION NOTICE		
Field Visit.....	352.....	\$ 52,800
No Field Visit.....	38.....	\$ 3,230
PLAN REVIEW.....	7.....	\$ 700
EXISTING SYSTEM EVALUATION.....	28.....	\$ 4,200
DENIAL REVIEW.....	3.....	\$ 600
PUMPER TRUCK INSPECTION.....	32.....	\$ 1,440
ANNUAL INSPECTIONS.....	21.....	\$ 3,150
VARIANCE APPLICATIONS.....	40.....	\$ 9,000
S.D.S. LICENSES.....	900.....	\$ 157,500
SURCHARGES.....		\$ 239,025
<hr/>		
TOTAL.....		\$ 860,865
Projected Fee revenue for the 91-93 Biennium.....		\$ 1,721,730

BRIEF DESCRIPTION OF PROGRAM OBJECTIVES AND RESPONSIBILITIES

The Department of Environmental Quality is responsible for developing and implementing the state wide on-site sewage treatment and disposal program. The program is guided by administrative rules previously adopted by the Commission pursuant to their authority under ORS 454.625. The objectives of the program are to assure that sewage disposal sites are suitable for that purpose, and that sewage systems are properly designed, constructed, operated and maintained, consistent with protection of the public health, safety, and waters of the state.

Oregon Revised Statute 454.725 provides that the Department may enter into agreements with local units of government to perform specific duties on behalf of the Department, and fees may be collected for performing these duties. Under the terms of this statute, 23 counties have executed memorandums of agreement with the Department to assume responsibility for conducting the on-site program in those counties. The day-to-day activities performed by the agreement counties on a fee-for-service basis include: responding to applications for site evaluations; issuing construction permits, alteration permits, and repair permits; responding to requests for changes in system use; conducting pre-cover inspections of installed systems, issuing certificates of satisfactory completion for completed installations; conducting existing system evaluations; inspecting septic tank pumping vehicles and equipment; and performing annual inspections of certain types of systems. Activities conducted without an associated fee include: enforcement of rule violations; technical assistance to the public and Department; sanitary surveys to determine environmental and public health risks; response to complaint investigations; and system installer workshops. Agreement counties may, pursuant to ORS 454.745, adopt fee schedules for services performed, up to the schedule of maximum fees established by rule of the Commission. An agreement county may not, however, collect more in fees than the total cost of providing the services.

Department staff perform these same duties in the remaining 13 counties. The Department also conducts denial reviews, responds to variance requests, reviews system construction plans, evaluates large system proposals, and annually licenses sewage disposal service businesses on a fee-for-service basis. There are several duties the Department performs that do not have an associated fee for service. These include: program administration, planning and development; audits of the services provided in each county; rule development; technical assistance and training for field staff; and the enforcement of violations of Commission rules.

MEMORANDUM

ATTACHMENT I

To: Environmental Quality Commission
From: Sherman Olson, Hearing Officer
Subject: HEARING OFFICER'S REPORT

Summary of Procedure:

Pursuant to public notice, public hearings were conducted as follows:

LOCATION:	<u>PENDLETON</u> State Office Building 3rd Floor Conference Room 700 S.E. Emigrant Pendleton, Oregon	<u>BEND</u> Cascade Natural Gas Bldg. Conference Room 334 N.E. Hawthorne Bend, Oregon
DATE:	April 16, 1991	April 17, 1991
TIME:	10 am	10 am
LOCATION:	<u>ROSEBURG</u> State Office Building Conference Room B 1937 W. Harvard Blvd. Roseburg, Oregon	<u>PORTLAND</u> Executive Building Conference Room 3-A 811 S.W. Sixth Avenue Portland, Oregon
DATE:	April 18, 1991	April 19, 1991
TIME:	10 am	10 am

The purpose of the hearings was to receive testimony on proposed amendments to the on-site sewage disposal rules. Each hearing was opened with a statement of purpose of the hearing and guidelines for conduct of the public hearing. Oral testimony was taped and written testimony was received. The Hearing Officer announced that the record would remain open to receive written testimony through April 19, 1991, to 5 pm.

A list of attendees at each of the hearings is provided as Attachment 1 of this report. A total of 17 people attended the hearings, although no one appeared at the hearing in Portland. No testimony was offered for the record at either the Bend or Portland hearings. Written comments were received from six individuals. The written testimony is provided as Attachment 2 of this report, and is summarized following the oral summary.

SUMMARY OF ORAL TESTIMONY:

April 16 1991--Pendleton, Oregon

Mr. Craig B. Kreutz, C.B. Septic Tank Service, stated that the rate increases are necessary for Oregon to maintain and stay ahead as an environmental leader not only in the Northwest but throughout the United States. He supports the Department's efforts to preserve and protect the quality of Oregon's public waters.

April 17, 1991--Bend, Oregon

No testimony was offered for the record.

April 18, 1991--Roseburg, Oregon

Mr. Eugene Bryant, commented that he believes the Department imposes absurd and incomprehensible rules randomly and indiscriminately upon the public, with total disregard as to their individual situations. He was disturbed that Department staff would not schedule to meet with him at his property to discuss what would be necessary to approve or develop a better sewage disposal system. Mr. Bryant does not believe the amount of time spent evaluating the twenty-five test pits on his property, including travel to and from the site and completion of the paperwork, could possibly have taken more than one hour. In his view, the cost of a site evaluation should not be more than \$50 to \$75. He would like the opportunity to bid on these services to be provided to the public. He would like the Department to actively explore methods to reduce the costs to the public in providing services.

Mr. Pat Ligget, commented that the Department should not make a profit when implementing environmental programs, and should not compete with local business. The Department has usurped its authority by not keeping the public informed, and has put people out of work. He advises the Department needs to get out of commercial business and get back to being the environmental quality agency. Good taxes are paid for the Department to take care of the basic fundamentals.

Mr. Melvin Davis, stated that it takes more time today for inspection of on-site systems than when the program was being implemented by Douglas County. He thinks the Department is way out of line on their fees for services because they do not draw the plans for the systems any more. There is too much paperwork. He believes the

Department is over-budgeted for the services they provide and should not raise fees. It is his view the fee for a sand filter permit should not be any different than the fee for a standard system permit, the inspection time is the same.

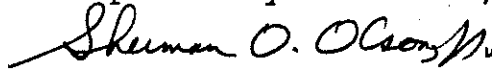
SUMMARY OF WRITTEN TESTIMONY:

1. Mr. Larry Moore, President, A Company, Inc. Mr. Moore believes the fees are high enough at this time. The Department could pick up lost revenue by taking enforcement action against individuals and companies that don't have licenses and should.
2. Mr. Richard L. Polson, Supervisor, Building Services Section, Clackamas County. Mr. Polson states his office has no objection to the proposal to change and/or increase on-site fees, but believes additional changes are needed to make the fees proportional to the amount of work involved. For example, two different alternative systems usually require the same number of inspections, yet their permit fees are widely different. He advises a reduction in the capping fill system permit fee and an increase for the tile dewatering system permit. The permit fee for a pressure distribution system should also be increased because an additional inspection is necessary. In addition, he suggests that some rule language within the fee schedule ought to be clarified.
3. Mr. C. William Olson, R.S., Administrator, Josephine County Environmental Health Department. Mr. Olson states his office supports the proposed fee amendments. The service must be as nearly as possible self-supporting.
4. Mr. Rick Partipilo, R.S., Manager, Linn County Environmental Health, Department of Health Services. Mr. Partipilo supports the proposed fee amendments and believes they are reasonable and necessary. He states that without adoption of this proposal, Linn County and others will need to request EQC approval of individual county fee packages adequate to fund local programs. The Department's on-site program has not been adequately funded in recent years, causing a reduction of assistance to the counties and a loss of momentum statewide. He believes it is essential for the Department to rebuild the program so that these necessary services can again be available.

5. Mr. Doug Marshall, R.S., Tillamook County Sanitarian. Tillamook County supports many of the proposed fee amendments. Many of the current fees do not cover the actual costs for the services provided. However, the County opposes the proposed increases in surcharges because the Department has not been assisting the Counties satisfactorily, and has been reducing its commitment.

6. Ms. Mary MacArthur, Dayville, Oregon. Ms. MacArthur believes the Department is unresponsive to the needs of the public. She states the Department has become a growing bureaucracy that dictates, regulates and impedes progress and survival. Because many factors in eastern Oregon are not the same as in the western metropolitan areas of the state, regulations should be developed to take those differences into account.

Respectfully submitted,



Sherman O. Olson, Jr., R.S.
Hearing Officer

Attachments:

- Attachment 1: Attendance Lists for Hearings
- Attachment 2: Written Testimony



A COMPANY, INC.

P.O. Box 5702
Boise, ID 83705

(208) 362-3000— Boise
(208) 467-5000 — Nampa

(208) 423-5200 — Kimberly
(208) 642-9575 — Payette

March 20, 1991

DEA
Water Quality Division
Industrial & On-Site Waste Water Section
811 S.W. Sixth Avenue
Portland, OR 97204

Re: Fee increase proposal for
sewage disposal activities
and disposal service license.

Gentlemen:

I wish to comment on the fact that I believe the fee at this time is high enough. I feel you could pick up on lost revenue by enforcing the measure to make sure companies, or individuals, are paying their dues and getting licensed. I know this area is being seriously abused.

I also fee the City of Ontario charges unfairly. The fee is set at a level that operators cannot afford. I feel this could lead to other consequences that would prove unfavorable.

Sincerely,

Larry Moore
President
A Company, Inc.

LM/nd

RECEIVED
MAR 22 1991

WATER DIVISION
DEPT. OF ENVIRONMENTAL QUALITY



CLACKAMAS COUNTY

f
Sherril Olson

Attachment I-2

Department of Transportation & Developpn

March 27, 1991

WINSTON KURTH
EXECUTIVE DIRECTOR

RICHARD DOPP
DIRECTOR
OPERATIONS & ADMINISTRATION

TOM VANDERZANDEN
DIRECTOR
PLANNING & DEVELOPMENT

Department of Environmental Quality
Water Quality Division
Industrial and On-site Wastewater Section
811 S.W. Sixth Avenue
Portland, OR 97204

RECEIVED
MAR 29 1991

**WATER QUALITY DIVISION
DEPT. OF ENVIRONMENTAL QUALITY**

SUBJ: Proposed fee increases for the
On-site Sewage Disposal Program

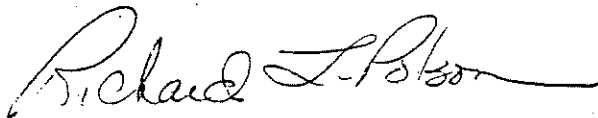
This office has reviewed the proposed rule changes to OAR 340-71-140 and has the following comments. In general, we find that this proposal is a step in the right direction. However, there are some issues within this rule package that we believe should be modified.

In Section (1)(b)(A), changes are made in the fees for construction-installation permits. It appears that an attempt has been made to develop a fee schedule very much parallel to the existing fee schedule. Some consideration, however, should be given to some changes in the structure. Sewage disposal systems that require more inspections than a conventional system should have fees that reflect the additional time necessary to do the inspection. For example, Tile Dewatering Systems routinely require three inspections prior to final approval. While it is theoretically possible to do a Tile Dewatering System with two inspections, the reality of the situation is that it is rarely ever done that way. Capping Fill Systems can be done in either two or three inspections also. However, there is a significant difference in the fees charged for these two systems. This office would support a reduction in the fee charged for Capping Fill Systems and an increase in the fee charged for Tile Dewatering Systems. While the selection of a number as an appropriate fee may be a bit arbitrary, I would recommend a number around \$340 to \$350 as an appropriate fee for both the Capping Fill and Tile Dewatering System. I would also recommend that the fee for Pressurized Distribution Systems be increased commensurate to the fact that at least two inspections are required on every such system. A fee equal to or the same as that charged for Capping Fills or Tile Dewatering Systems appears appropriate.

Department of Environmental Quality
Page 2
March 27, 1991

In Section (1)(k), a note makes reference to not charging for evaluation reports on any proposed repair, alteration or extension of an existing system. This language appears to be in direct conflict with the rules concerning authorization notices. While I agree that a review of a failing system should be done at no fee, a proposal to alter or extend an existing system is almost always done in connection with some kind of a changing use, which requires the issuance of an authorization notice. It would be far better for this note to say "The fee shall not be charged for an evaluation report on any proposed repair of an existing system."

In summary, this office has no objections to the overall idea of changing and/or increasing on-site sewage disposal fees as you have proposed. However, some changes need to be made in order to make these fees proportionate to the amount of work involved and to clarify some legal language. If you have any questions with regard to this letter, I would appreciate your comments prior to the hearing date. I would be glad to embellish or revise my comments based on your questions and comments.



RICHARD L. POLSON - Building Services Supervisor
Building Services Section

/mb

JOSEPHINE COUNTY, OREGON
HEALTH DEPARTMENT

April 5, 1991

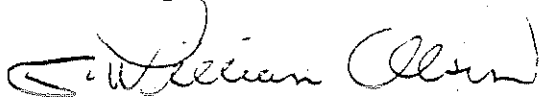
Dept. of Environmental Quality
Water Quality Division
Industrial and On-Site Waste Water Section
811 S.W. 6th Ave.
Portland, OR 97204

Dear Sir,

Thanks for the opportunity to comment regarding the proposed on-site sewage fee increase.

Josephine County Environmental Health Department supports the proposed fees increases. The service must be as nearly as possible self supporting.

Sincerely,



C. William Olson, R.S., M.P.H.
Administrator

CWO:sk

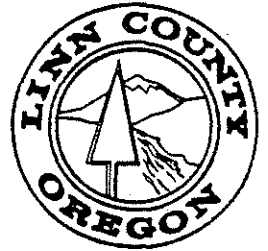
RECEIVED
APR 8 1991

WATER QUALITY DIVISION
DEPT. OF ENVIRONMENTAL QUALITY

LINN COUNTY DEPARTMENT OF HEALTH SERVICES

P.O. Box 100, Albany, Oregon 97321

Administration: 967-3866
 Alcohol & Drug Treatment: 967-3819
 Developmental Disabilities: 967-3890
 Environmental Health: 967-3821
 Mental Health Services: 967-3866
 Public Health: 967-3888
 Women, Infants & Children Nutrition: 967-3892
 FAX 926-8228



RECEIVED
 APR 19 1991

MEMORANDUM

**WATER QUALITY DIVISION
 DEPT. OF ENVIRONMENTAL QUALITY**

TO: Environmental Quality Commission

FROM: Rick Partipilo, R.S., Manager
 Environmental Health Program *RJP*

DATE: April 16, 1991

SUBJECT: On-Site Sewage Disposal Fee Increase

I am writing in support of the proposal to increase on-site sewage disposal program application fees. In my opinion, the proposal is both reasonable and necessary.

Without adoption of the proposed statewide fee package, Linn County and others will need to request Environmental Quality Commission approval of individual county fee packages adequate to fund local programs. This outcome will be burdensome for all parties and will not address the Department of Environmental Quality's own statewide program funding needs.

In recent years, the Department of Environmental Quality's on-site sewage disposal program has not received adequate funding. Contract obligations to counties have not been met. Direct service to non-contract counties has been minimal. The program has lost momentum statewide.

Rebuilding these critically needed services is essential. Developing better linkages between the on-site sewage disposal program and the commercial and industrial onsite disposal permit activities at the Department of Environmental Quality is also needed.

I am hopeful this proposal will enable progress to be made in both areas, and that this initiative will be sustained by an on-going commitment.

jla


cc: Board of Commissioners
 Dennis Dahlen, Administrator;
 Linn County Department of Health Services

Tillamook County Courthouse
201 Laurel Avenue
Tillamook, OR 97141
Tele: 503 842 3409
Fax: 503 842 2721

MEMO

Date: 18 Apr 91

To: Sherm Olson, DEQ, Ind. & On-Site Wastewater Sect.

From: Doug Marshall, County Sanitarian 

Re: Proposed Fee Increases for On-Site Sewage Program

Tillamook County supports many of the proposed fee increases. We are encountering increased costs in maintaining an on-site program at the County level. Many of the current fees do not cover the actual costs of the service (Construction permits for alternative sand-filter systems, for example, require at least 3 inspections and sometimes 5 or 6 visits).

Tillamook County is concerned with the proposed fee increases for OAR 340-71-140(4)(a), Surcharges. We are concerned that the cutbacks and transfer of personnel will effect the level of service to counties, such as ours. In effect, all Contract Counties will pay more and receive less service. Several unresolved issues will illustrate this problem:

1. The final report of the 1989 Citizen Advisory Committee on On-Site Sewage Disposal was issued and only 1 of the 8 recommendations was acted upon (ie: raise fees on repair permits).
2. The On-Site Technical Review Committee met several times in 1989 and recommended adding waste strength factors to the rules. No action has been taken on this information.
3. On 10 Apr 90 a retreat was held with many of the DEQ On-Site and Contract County personnel. A final report has never been issued for that meeting and few of the verbal agreements have been implemented.

4. Many personnel working within the on-site program are not Registered Sanitarians, as required by ORS 700.020. The House Interim Committee on Sunset Review is looking into the problem, however DEQ in a 17 Aug 90 letter to the above committee states, "It is the view of this Department that sanitation registration is not necessary...".

Until these problems are discussed, and resolved, we must oppose the proposed increases in surcharge fees.

Cc: file

April 10, 1991

DEQ, Water Quality Division
 Industrial and On-Site Waste Water Section
 811 SW Sixth Avenue
 Portland OR 97204

While this is supposed to be a "chance to comment" on increased fees (no doubt NOT a chance to change any plans), I am going to take this opportunity to comment on the DEQ itself and its effect upon small communities and individuals in small communities such as ours in eastern Oregon.

The DEQ has been unresponsive to problem solving in instances where there is a system installation. DEQ personnel have been insensitive and uncaring in dealing with the financial needs of poor property owners, to the point of the ridiculous. An example: a single wide, old, mobile home on a quarter of an acre, owned by an elderly lady, needed system repair. The only solution DEQ personnel would approve was a pumping system that would have cost more than the value of the home and property combined.

DEQ requests endless compliance with engineering specifics, but doesn't provide the specifics except as rejections of system plans submitted. DEQ has become a growing bureaucracy that does not serve people, but dictates, regulates, and impedes progress, and indeed survival, in our small communities. While the concern for the environment must be primary, real life facts should have some impact on decision making. Facts such as the number of people affected, real negative impacts, serious financial impact on communities and individuals, including the time element involved with endless waiting for decision making upon these communities and citizens. No matter what the law says, things are different here in eastern Oregon than they are west of the mountains. Terrain, weather, populations, wildlife, economies, to name a few. We should not be governed entirely by criteria set down in the metropolitan areas of our state.

Our small eastern Oregon communities simply cannot survive in this atmosphere. Hardworking, taxpaying citizens are being forced to relocate, are, indeed, being forced out of work, forced off their property.

Tell me, who is going to pay your fees and salaries when there are no more taxpayers?

M MS. MARY MACARTHUR
 P. O. BOX 316
 DAYVILLE, OR 97825

RECEIVED
 APR 15 1991
 WATER QUALITY DIVISION
 DEPT. OF ENVIRONMENTAL QUALITY

STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMORANDUM

DATE: May 11, 1991

TO: Environmental Quality Commission

FROM: Sherman O. Olson, Jr., Industrial & On-Site Wastewater
Section, Water Quality DivisionSUBJECT: Response to Written and Oral Testimony on Proposed
Amendments to the On-Site Sewage Disposal Rules

The Department conducted public hearings in Pendleton, Bend, Roseburg and Portland on April 16, 17, 18 and 19 of this year to receive comments on the Department's intent to amend two administrative rules concerning the on-site sewage disposal program. In one rule, a new schedule of maximum fees was proposed so as to provide additional revenue needed to fund the fee-supported portion of the program in accordance with the Governor's recommended budget. The other proposed rule amendment would provide the ability for persons other than family members suffering physical or mental impairment to be housed in a mobile home placed as a second dwelling during the period of hardship. A summation of written and oral testimony appears in Attachment I.

Comments provided as testimony generally fell into the following categories:

- 1). The proposed fees are too high.
- 2). The proposed fees are reasonable and necessary.
- 3). The proposed fees may be too low.
- 4). Other.

PROPOSED FEES ARE TOO HIGH

Six persons stated a view that all or a portion of the proposed fees are too high. Of these, one person specifically opposes an increase in the surcharge fees, and another believes the fee for a capping fill system is too high.

Response: The fee schedule was developed to provide a revenue base to fund the fee-supported portion of the on-site program, consistent with statutory direction. The revenue base includes funding earmarked for the hiring of additional staff so that the program objectives may be accomplished. Alternative revenue sources other than scarce general fund dollars are not available to offset the need to raise fees. Staff reexamined the assumptions used to establish the fee for the capping fill system permit. It commonly takes four pre-cover inspections during the construction of a capping fill system to verify that it is constructed properly. This takes an estimated 9.6 hours. However, if the system installer is able to coordinate requests for system inspection efficiently, it is possible to reduce the number of pre-cover inspections to three, thus taking an estimated 8.0 hours from start to finish. Staff believe the fee for a capping fill permit should be set to reflect the amount of time (and cost to the Department) it commonly requires, and recommends no change from the proposed fee.

PROPOSED FEES ARE REASONABLE

Five persons expressed support for all or a portion of the proposed fees.

Response: Staff agree.

PROPOSED FEES ARE LOW

One person argued that the fees for tile dewatering permits and pressure system permits should be higher because they commonly require two to three pre-cover inspections.

Response: The fees originally proposed for these two alternative systems were based on the need for only one pre-cover inspection being necessary. Staff reexamined the data used to estimate the amount of time needed for inspection and concluded both systems should require at least two inspections during construction. With two inspections the total time needed is estimated to be not less than 6.4 hours. The fees proposed for both systems should therefore be increased to account for an additional visit.

OTHER

One person asserted that subsection (1)(k) of the fee schedule (no fee shall be charged for an evaluation report on any proposed repair, alteration or extension of an existing system) is in direct conflict with the rule concerning authorization notices and should therefore be rewritten.

Response: Staff believe the language in question does not conflict with the authorization notice rule language because a distinction is viewed to exist between a report (of observations and recommendations) and a notice that authorizes a sewage flow increase into a system or a change in the use of the system. Staff also find the language is consistent to the statutory restriction in ORS 454.755(2) that directs the Department to respond to an evaluation report request on any proposed repair, alteration of extension of an existing system and issue such a report of finding without charge.

Several persons expressed a belief that the Department was no longer providing the level of service to the public or agreement counties that should be provided.

Response: The Department has not maintained an adequate staff level to provide the services and assistance the public and counties demand. Staff levels were reduced in the early 1980's because of the building recession at that time. Later, when construction picked up, staff were not re-hired to handle the additional workload. The proposed fee increases are earmarked as the fund base to allow staff levels to be increased so that a higher level of service can be provided to the public and agreement counties.

REQUEST FOR EQC ACTION

Meeting Date: March 11, 1991
Agenda Item: D
Division: Water Quality
Section: Industrial & On-Site

SUBJECT:

Authorization for Rulemaking Hearing on Proposed Increases to On-Site Sewage Program Fees

PURPOSE:

Fee increases are proposed to generate about \$1.7 million during the 1991-93 biennium to fund the fee-supported portion of the on-site sewage treatment and disposal program, contingent upon legislative approval of the Governor's recommended program budget.

ACTION REQUESTED:

- Work Session Discussion
 - General Program Background
 - Potential Strategy, Policy, or Rules
 - Agenda Item for Current Meeting
 - Other: (specify)

Authorize Rulemaking Hearing

Adopt Rules

Proposed Rules
Rulemaking Statements
Fiscal and Economic Impact Statement
Public Notice

Attachment A
Attachment B
Attachment C
Attachment D



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696

- Issue a Contested Case Order
- Approve a Stipulated Order
- Enter an Order
 - Proposed Order Attachment

- Approve Department Recommendation
 - Variance Request Attachment
 - Exception to Rule Attachment
 - Informational Report Attachment
 - Other: (specify) Attachment

DESCRIPTION OF REQUESTED ACTION:

The Department of Environmental Quality (Department) requests the Environmental Quality Commission (Commission) authorize public hearings to receive comment on the proposed amendments to the administrative rule establishing maximum fees that may be charged applicants requesting site evaluations, permits, licenses and other services. The proposed fee schedule is presented in Attachment A. These services are provided by the Department and by counties having a memorandum of agreement with the Department to implement the on-site program. A brief description of the on-site program objectives, the responsibilities and relationship between the Department and the agreement counties is contained in Attachment H.

The Governor's recommended budget for the 1991-93 biennium estimates that approximately \$1.7 million in fee revenues must be generated to operate and maintain the on-site program as administered by the Department. Included in this budget is a fee supported decision package, \$461,000, to allow the hiring of additional staff. During the recession in the early 1980's, there were severe staff reductions in the on-site program caused by a drastic reduction in new home construction. After the economy picked up again, the on-site program staff was not increased to the strength necessary to accomplish the objectives of the program. With the current (reduced) staff level, the Department is not able to perform its responsibilities satisfactorily. The public experiences lengthy delays (up to 6 to 8 weeks) in response to applications for services. Staff found it necessary to discontinue their involvement in several aspects of the program that were designed to reduce environmental and public health risks. In order for the program objectives to be met, additional staff must be brought into the program.

Meeting Date: March 11, 1991
Agenda Item: D
Page 3

Staff have reviewed the program activity records for the last 2 and 1/2 years, and based on that review, estimated the number of on-site applications the Department may receive in FY 92. Using those estimates as the basis of predicting activity levels for the 91-93 biennium, staff have projected fee revenues that might be expected with the proposed new schedule of fees (Attachment G) and with the current fee schedule (Attachment F). If the proposed fee schedule is adopted, the Department projects that approximately \$1.7 million will be available to fund the fee-supported portion of the program. However, without an amendment to the schedule of fees, the estimated fee revenue will be approximately \$1.1 million, which is about \$100,000 less than the Governor's projected base revenue required to fund the program without the decision package.

AUTHORITY/NEED FOR ACTION:

<input checked="" type="checkbox"/> Required by Statute: <u>ORS 454.745 (4)</u>	Attachment <u>E</u>
Enactment Date: <u>1973</u>	
<input checked="" type="checkbox"/> Statutory Authority: <u>ORS 454.745 (4)</u>	Attachment <u>E</u>
<input type="checkbox"/> Pursuant to Rule: _____	Attachment _____
<input type="checkbox"/> Pursuant to Federal Law/Rule: _____	Attachment _____
<input type="checkbox"/> Other:	Attachment _____
<input type="checkbox"/> Time Constraints:	

DEVELOPMENTAL BACKGROUND:

<input type="checkbox"/> Advisory Committee Report/Recommendation	Attachment _____
<input type="checkbox"/> Hearing Officer's Report/Recommendations	Attachment _____
<input type="checkbox"/> Response to Testimony/Comments	Attachment _____
<input type="checkbox"/> Prior EQC Agenda Items: (list)	Attachment _____
<input type="checkbox"/> Other Related Reports/Rules/Statutes:	Attachment _____
<input checked="" type="checkbox"/> Supplemental Background Information:	
Estimated DEQ Fee Revenue for FY 92, Under Existing Fee Schedule	Attachment <u>F</u>
Estimated DEQ FEE Revenue for FY 92, Under Proposed Fee Schedule	Attachment <u>G</u>
Brief Description of On-Site Program Objectives and Responsibilities	Attachment <u>H</u>

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

The regulated/affected community will have an opportunity to offer comment on the proposed rule amendment as part of the rulemaking process. If the proposed amendments are adopted, applicants for on-site services and licenses will need to submit increased fees in accordance with the new fee schedule. Many of the fees are proposed to be increased by approximately 50% above the fees that were adopted by the Commission on May 11, 1988. In agreement counties, the surcharge on most applications will increase by \$5. Also, the surcharge increment for site evaluations will increase by \$5. A \$10 surcharge is proposed on applications for existing system evaluation reports. The Department is proposing to bill permit holders \$25 when correction deficiencies found during the pre-cover inspection have not been corrected and thereby cause staff to make additional unplanned visits to inspect the system construction. The fee for a repair permit to correct a minor sewage disposal system problem (such as a broken pipe or damaged septic tank) for a system serving a commercial facility is proposed to be the same as would be charged for a minor repair permit for a system serving a single family dwelling. Systems using pumps or siphons, other than sand filter systems or pressurized systems, may have an additional \$25 added to the normal permit cost due to the additional time required for inspection. Sewage disposal service companies will need to pay higher fees for the annual license they must obtain from the Department. The increase will be \$25 for each license, and \$10 to \$15 for each pumping vehicle inspected.

Agreement counties will collect from applicants the increased surcharge applicable to each application they receive, and remit the collected surcharges to the Department as stipulated in the agreement. This should have no appreciable effect on these offices because they have been collecting the application surcharges for the Department since 1981. Each agreement county will have the ability to adjust its on-site fee schedule, provided the adjustments are not contrary to the intergovernmental agreement with the Department.

PROGRAM CONSIDERATIONS:

The proposed fee schedule, if adopted, will generate the revenue the Department requires to fund the fee-supported portion of the on-site sewage disposal program, as identified in the Governor's proposed budget. This will allow the

Department to increase staff necessary to accomplish the program objectives. However, if the proposed fee schedule is not taken to hearing or not adopted, the revenue generated from fees and surcharges will be significantly below the Governor's proposed budget, and will either require the difference to be made up from state general funds or major adjustments will need to be made to the program to reduce expenditures.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

1. Authorize the Department to hold public hearings on the proposed fee schedule.

The Governor's proposed FY 91-93 budget estimates that slightly more than \$1.2 million in fee revenue will be required to provide the current level of service to the public for the biennium. However, because the Department believes service to the public must be improved in order to accomplish the program objectives, the Governor's proposed budget includes a decision package to increase staff at both the program level and within the regions. The decision package relies upon fees to provide the funding base, and would therefore increase the fee revenue necessary to fund the program to approximately \$1.7 million. Given the numbers and types of applications expected during the biennium, the proposed schedule of maximum fees for on-site activities was developed to provide an estimated fee revenue of about \$1.7 million.

The agreement counties rely on fee revenues to support a major portion of their involvement in the on-site program. County general fund monies make up the difference between fee revenues and program expenditures. Several counties must reduce their reliance on the county general fund and, therefore, find it necessary to increase their application fees to maintain the current level of service they provide to the public. Some counties with fee schedules at the maximum level currently established by the Commission will increase their fees when and if the Commission adopts the proposed new fee schedule.

2. Do not authorize the Department to conduct hearings.

Without an adjustment to the schedule of maximum fees, the Department projects the fee revenue for the biennium will be slightly more than \$1.1 million. This is nearly \$0.6

million below the Governor's recommended budget (decision package included), and more than \$0.1 million below the estimated base budget necessary to maintain current service levels to the public. Taking this option will cause further erosion of program objectives, unless scarce general fund dollars are made available.

Each county that needs to increase application fees above the level currently established by rule could petition the Commission individually for authorization to adopt higher fees. Each petition would require the Department to proceed through a rulemaking process. As many as twenty-three (23) petitions could be submitted. Even if only a fraction of the counties introduced petitions, the Department's program resources would be crippled. It can be expected that some counties would re-examine whether it is in their best interests to continue program involvement. Those that elect not to maintain the agreement pass the responsibility back to the Department.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department recommends approval of Alternative, Authorization for the Department to hold public hearings on the proposed schedule of maximum fees, as contained in Attachment A.

The Governor's recommended budget projects that for the 1991-93 biennium, slightly more than \$1.7 million in fee revenue will be necessary to fund the fee supported portion of the on-site program. This projection includes an estimated \$1.2 million to maintain the program at existing levels through the biennium, and a fee supported decision package to increase staff levels so that service to the public may be improved and the program objectives can be accomplished. The existing fee schedule is projected to provide slightly more than \$1.1 million in fee revenue. If the on-site fees are not increased, additional state general fund dollars will be needed if the program's objectives are to be met.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

Establishing fees as a revenue source for funding program expenditures is consistent with the strategic plan, agency policy, and legislative policy.

Meeting Date: March 11, 1991
Agenda Item: D
Page 7

ISSUES FOR COMMISSION TO RESOLVE:

NONE

INTENDED FOLLOWUP ACTIONS:

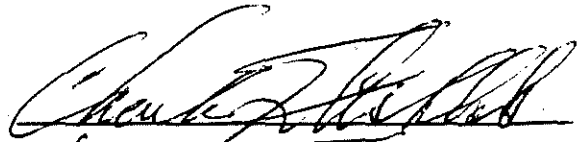


If the Commission authorizes the Department to conduct public hearings, the public notice and copy of the proposed amendments to the fee schedule rule will be sent to all known interested persons, and public hearings will be conducted. Following receipt, summary and evaluation of testimony, the Department will return to the Commission and request adoption of the proposed rule amendment, contingent upon legislative approval of the Governor's recommended program budget.

Approved:

Section:

Division:

Director:

Report Prepared By: Sherman O. Olson, Jr.

Phone: 229-6443

Date Prepared: February 5, 1991

SOO:crw
IW\WC7846
2/5/91

ADDENDUM TO REQUEST FOR EQC ACTION

ENVIRONMENTAL
QUALITY
COMMISSION

Meeting Date: March 11, 1991
Agenda Item: D
Division: Water Quality
Section: Industrial & On-Site

The Department would like to include a proposed technical rule amendment with the request for authorization to begin rulemaking on the proposed on-site sewage program fee schedule. The issue to be resolved concerns a limitation in a rule that restricts the personal hardship placement and occupancy of mobile homes to family members suffering physical or mental impairment. We believe it is reasonable to expect that the care provider assisting the person suffering hardship may need to reside in the mobile home, and/or that the care provider may not be a family member. The proposed rule amendment is printed on the reverse side of this addendum.

The Department would like this included in the request for hearing authorization now because otherwise it may be a year before technical rule amendments are proposed for rulemaking.

Revisions have been made to the following attachments to include the proposed technical amendment:

- Attachment A ----- Proposed Rules
- Attachment B ----- Rulemaking Statements
- Attachment C ----- Fiscal and Economic Impact Statement
- Attachment D ----- Public Notice

Approved:

Section: *[Signature]*
Division: *[Signature]*
Director: *[Signature]*

Addendum Prepared By: Sherman O. Olson, Jr.

Phone: 229-6443

Date Prepared: March 7, 1991

IW\WC7950

U.S. DEPARTMENT OF AGRICULTURE
NATIONAL SERVICE CENTER
1400 N. MEADOWS BLVD.
FAYETTEVILLE, AR 72701

gallons beyond the design capacity or by not more than fifty (50) percent of the design capacity for the system, whichever is less; an Authorization Notice valid for a period not to exceed one (1) year shall be issued if:

- (a) The existing system is shown not to be failing; and
 - (b) All set-backs between the existing system and the structure can be maintained; and
 - (c) Sufficient area exists so that a complete replacement area meeting all requirements of these rules (except those portions relating to soil conditions and groundwater) is available; and
 - (d) In the opinion of the Agent the proposed increase would not create a public health hazard or water pollution.
- (6) Only one (1) Authorization Notice for an increase up to three hundred (300) gallons beyond the design capacity, or increased by not more than fifty (50) percent of the design capacity, whichever is less, will be allowed per system.
- (7) For changes in the use of a system where projected daily sewage flows would be increased by more than three hundred (300) gallons beyond the design capacity, or increased by more than fifty (50) percent of the design capacity of the system, whichever is less, a Construction-Installation Permit shall be obtained. Refer to rule 340-71-210.
- (8) Personal Hardship:
- (a) The Agent may allow a mobile home to use an existing system serving another dwelling, in order to provide housing for a a person {family-member} suffering hardship or for an individual providing care for such a person, by issuing an Authorization Notice, if:
 - (A) The Agent receives satisfactory evidence which indicates that a person {the-family-member} is suffering physical or mental impairment, infirmity, or is otherwise disabled (a hardship approval issued under local planning ordinances shall be accepted as satisfactory evidence); and
 - (B) The system is not failing; and
 - (C) The application is for a mobile home; and
 - (D) Evidence is provided that a hardship mobile home placement is allowed on the subject property by the governmental agency that regulates zoning, land use planning, and/or building.

RATIONAL USED TO ESTIMATE FEE LEVELS

ASSUMPTIONS USED IN ESTIMATING ON-SITE STAFF NEEDS AND COSTS

- A. All mileage estimates are one-way
- B. Average travel speed is 40 MPH.
- C. Worse case scenario--one site visited each trip
- D. 15 percent of site evaluations will require a second site visit.
- E. All alternative systems will have a total of 4 site visits (one prior to issuing permit, three pre-cover inspections).
- F. Time estimates to accomplish each work activity are from March 11, 1988 staff report to EQC (Agenda Item I).
- G. A 40 percent time factor is added in calculating the FTE technical staff requirement to accomplish the program mission, for non-fee related activities (complaint investigation, telephone calls, technical training, sanitary surveys, etc.).
- H. 1 FTE equates to 1848 work hours/year. This value takes into account sick leave (5 days) and vacation (15 days).
- I. The average travel time and distance, one way is 0.5 hours and 20 miles.
- J. To determine an average hourly cost of a technical staff person processing applications, step 5 of range 24 was used (\$32,472/year). For the purpose of including OPE, indirect costs, and the cost of services, supplies and travel, the hourly cost calculation will use two times the annual salary (\$64,944) in making the hourly cost estimate. Taking into account the percentage of time an FTE would be available to act on applications (about 60%), the hourly rate would be about \$58 ($\$64,944 \div 1109$ hours). This value does not include an estimated cost for supervision or support services.

NUMBERS OF APPLICATIONS RECEIVED AND PROJECTED

	FY 89	FY 90	FY 91	FY 92
SITE EVALUATIONS				
1st Lot.....	529	661	728	660
Additional Lots.....	60	136	128	108
Commercial.....	8	6	6	7
CONSTRUCTION PERMITS				
Standard System.....	442	516	552	504
Capping Fill System.....	14	12	16	14
Holding Tank System.....	5	9	10	8
Pres. Dist. System.....	31	22	38	30
Sand Filter System.....	28	44	66	46
Other Alt. Systems.....	6	7	6	6
Alteration Permit.....	19	26	26	24
REPAIR PERMIT				
Single Family.....	286	361	286	311
Commercial.....	6	8	20	11
RENEWAL PERMIT				
Field Visit.....	9	15	0	8
No Field Visit.....	19	19	40	26
AUTHORIZATION NOTICE				
Field Visit.....	327	359	370	352
No Field Visit.....	40	42	32	38
PLAN REVIEW.....	7	5	10	7
EXISTING SYSTEM EVALUATION...	26	39	20	28
DENIAL REVIEW.....	3	1	6	3
PUMPER TRUCK INSPECTION.....	39	30	26	32
ANNUAL INSPECTIONS.....	19	25	18	21
VARIANCE APPLICATIONS.....	29	52	40	40

NOTE: Number of applications for FY 91 estimated, based on reports from July 1, 1991 through December 31, 1991.

FY 92 projections based on the sum of the numbers for FY 89, FY 90, and FY 91, divided by 3.

ESTIMATED TIME REQUIRED FOR FIELD ACTIVITIES FOR FY 92

ACTIVITY	BASE TIME	NUMBER ACTIONS	TOTAL TIME
STANDARD PERMIT:	4.25 HOURS	504	2142 HOURS
ALTERNATIVE PERMIT			
Pres. Dist.	6.4 HOURS	30	192 HOURS
Tile Dewatering	6.4 HOURS	3	19 HOURS
Capping Fill	9.6 HOURS	14	134 HOURS
Sand Filter	11.2 HOURS	46	515 HOURS
Other	4.8 HOURS	11	53 HOURS
ALTERATION PERMIT	3.8 HOURS	24	91 HOURS
REPAIR PERMIT			
major	3.8 HOURS	161	612 HOURS
minor	2.25 HOURS	161	362 HOURS
PERMIT RENEWALS:			
with visit	2.25 HOURS	8	18 HOURS
without visit	0.5 HOURS	26	13 HOURS
SITE EVALUATION:			
one visit	3.3 HOURS	659	2175 HOURS
two visits	5.8 HOURS	116	673 HOURS
AUTHORIZATION NOTICE			
With Visit	3.0 HOURS	352	1056 HOURS
Without Visit	1.0 HOURS	38	38 HOURS
EXISTING SYSTEM REPORT	3.0 HOURS	28	84 HOURS
ANNUAL INSPECTIONS	2.1 HOURS	21	44 HOURS
PUMPER TRUCK INSP.			
each vehicle	1.5 HOURS	32	48 HOURS
VARIANCE REQUESTS	12.0 HOURS	40	480 HOURS
<u>ESTIMATED TOTAL</u>			<u>8749 HOURS</u>

ESTIMATED TOTAL FIELD TIME PLUS 40% EQUALS 12,249 HOURS

APPROXIMATE COST ESTIMATES FOR ON-SITE ACTIVITIES

ACTIVITY	BASE TIME	APPROX. COST/HOUR	TOTAL COST
STANDARD PERMIT:			
1 Precover Insp.	4.25 HOURS	\$58	\$247
2 Precover Insp	5.8 HOURS	\$58	\$336
ALTERNATIVE PERMIT:			
Pressure Dist.	6.4 HOURS	\$58	\$371
Tile Dewatering	6.4 HOURS	\$58	\$371
Capping Fill	9.6 HOURS	\$58	\$557
Sand Filter	11.2 HOURS	\$58	\$650
Other	4.8 HOURS	\$58	\$278
ALTERATION PERMIT	3.8 HOURS	\$58	\$220
REPAIR PERMIT:			
major	3.8 HOURS	\$58	\$220
minor	2.25 HOURS	\$58	\$130
PERMIT RENEWALS:			
with visit	2.25 HOURS	\$58	\$130
without visit	0.5 HOURS	\$58	\$ 29
SITE EVALUATION:			
one visit	3.3 HOURS	\$58	\$191
two visits	5.8 HOURS	\$58	\$336
AUTHORIZATION NOTICE:			
With Visit	3.0 HOURS	\$58	\$174
Without Visit	1.0 HOURS	\$58	\$58
EXISTING SYSTEM REPORT	3.0 HOURS	\$58	\$174
ANNUAL INSPECTIONS	2.1 HOURS	\$58	\$122
PUMPER TRUCK INSP.			
each vehicle	1.5 HOURS	\$58	\$87

NOTE: These estimates pertain only to technical staff time and costs. They do not include an adjustment for management and support services costs.

REQUEST FOR EQC ACTION

Meeting Date: June 14, 1991
Agenda Item: I
Division: Water Quality
Section: Surface Water

SUBJECT:

Tualatin River Basin Nonpoint Source Control Watershed Management Plans for Agriculture and Forestry.

PURPOSE:

To approve or reject each plan and, if necessary, specify a process for revision and resubmission of a rejected plan.

ACTION REQUESTED:

- Work Session Discussion
 - General Program Background
 - Potential Strategy, Policy, or Rules
 - Agenda Item for Current Meeting
 - Other: (specify)

- Authorize Rulemaking Hearing
- Adopt Rules
 - Proposed Rules Attachment
 - Rulemaking Statements Attachment
 - Fiscal and Economic Impact Statement Attachment
 - Public Notice Attachment

- Issue a Contested Case Order
- Approve a Stipulated Order
- Enter an Order
 - Proposed Order Attachment



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696



Meeting Date: June 14, 1991
Agenda Item: I
Page 2

<input checked="" type="checkbox"/> Approve Department Recommendation	Attachment _____
<input type="checkbox"/> Variance Request	Attachment _____
<input type="checkbox"/> Exception to Rule	Attachment _____
<input type="checkbox"/> Informational Report	Attachment _____
<input checked="" type="checkbox"/> Other: specify	Attachments <u>A,A-1</u> <u>B,B-1</u>

DESCRIPTION OF REQUESTED ACTION:

The Environmental Quality Commission (Commission) is requested to either approve, reject or approve for a limited duration program plans as recommended by staff and reviewed by staff in the attachments and to adopt compliance schedules for controlling nonpoint source pollution from forested and agricultural lands in the Tualatin River Basin. Program plans are required of the Designated Management Agencies (DMA) by Commission Rule (OAR 340-41-470(3)(i)). These nonpoint source pollution control plans must show how each agency will meet load allocations for the Tualatin River Basin Total Maximum Daily Load (TMDL) Program. On August 10, 1990 the Commission approved all the urban DMA's (those cities and counties within the Tualatin River Basin) nonpoint source pollution control plans and deferred action on the forestry and agriculture plans.

Department staff recommend approval of the watershed management plan submitted by the Oregon Department of Forestry (ODF). The Department recommends approval until June, 1992 of the watershed management plan submitted by the Oregon Department of Agriculture (ODA). This will allow ODA to implement a voluntary compliance program, conduct instream water quality monitoring and possibly other monitoring to determine the effectiveness of voluntary efforts and report results to the Department by February 1, 1992. The Department would then determine whether the voluntary program was effective in meeting instream load allocations and report to the Commission in June, 1992. If it is determined by the Department that the voluntary compliance program is ineffective, the Commission would need to re-approve or modify the plan with the possible designation of a new DMA(s). ODA would also be directed to work with the Counties within the basin to develop mandatory compliance and enforcement ordinances which would be implemented by the Counties by January, 1993, if voluntary compliance did not work. ODA would continue to administer the Confined Animal Feeding Operation (CAFO) and Container Nursery Programs. Provisions for riparian vegetative buffers and filter strip requirements where streambank erosion occurs would be included in the plan.

Meeting Date: June 14, 1991
Agenda Item: I
Page 3

AUTHORITY/NEED FOR ACTION:

Required by Statute: _____ Attachment _____
 Enactment Date: _____
 Statutory Authority: _____ Attachment _____
 Pursuant to Rule: OAR 340-41-470(3)(g,h,i) Attachment _____
 Pursuant to Federal Law/Rule: _____ Attachment _____

 Other: _____ Attachment _____

 Time Constraints: (explain)

DEVELOPMENTAL BACKGROUND:

Advisory Committee Report/Recommendation Attachment _____
 Hearing Officer's Report/Recommendations Attachment _____
 Response to Testimony/Comments Attachment _____
 Prior EQC Agenda Items: (list) Attachment _____
 Other Related Reports/Rules/Statutes: Attachment _____

The watershed management plans subject to review are required by OAR 340-41-470(3)(g,h,i).

Supplemental Background Information Attachment A-2,B-2

In accordance with the rule cited above, nonpoint source watershed management plans for the Tualatin River Basin were submitted to the Department in March, 1990. The Department originally recommended conditional approval of the forestry and agriculture plans, but on June 29, 1990, the Commission instead extended the time period for action on the plans and directed staff to work with ODA and ODF to reduce the number of conditions and other outstanding issues. On August 10, 1990, the Commission accepted the Department's recommendation to again defer action on the agriculture and forestry plans until they could be modified to better address a number of issues. Following re-submission of the plans in November, 1990, the Department noted significant improvements but also noted that the plans still did not adequately address several key issues. After further revisions, the plans were again submitted for the Department's review in March, 1991.

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

ODA has expressed uncertainty as to (a) how an adequate authority might be developed for a mandatory phase of plan implementation and enforcement (b) obtaining long-term stable program funding, and (c) which agencies should be responsible for maintenance and exercise of these program elements.

All Counties (Washington, Clackamas, and Multnomah County) of the Tualatin River Basin have expressed preliminary willingness to discuss issues relating to implementation, enforcement authority and permanent funding programs for the agriculture watershed management plan, but discussions on these issues between ODA and the Counties have not formally begun.

The urban DMAs have expressed repeatedly to the Department their concern that ODA and ODF are being allowed a lesser standard of plan development and approval. They state that neither ODA or ODF have a Commission approved plan while the urban plans were approved almost one year ago. They also note that neither the agriculture or forestry DMA, particularly ODA, has implemented very many controls of phosphorus pollution within the Tualatin River Basin. There is also a concern that both plans will not be adequate to control nonpoint source pollution to meet the load allocations by the June 30, 1993 compliance date.

PROGRAM CONSIDERATIONS:

Approval of the ODA plan only until June, 1992, if voluntary compliance is ineffective, will involve the Department and Commission in a plan implementation and progress review process.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

The Department considered the following alternatives for the Forestry and Agriculture Tualatin River Basin Nonpoint Source Watershed Management Plans:

Forestry (ODF) Plan.

1. **Approval:** The ODF plan has adequately identified a process to monitor the water quality in the forested portions of the Tualatin River Basin to identify any increases in total phosphorus in the river and forested tributaries. If the

- results of the Nutrient Control Strategy Study indicate a need and/or if an increase in instream phosphorus levels occurs, ODF will proceed with an effectiveness monitoring program. This additional monitoring effort will determine the effectiveness of the Forest Practices Act (FPA) in controlling the movement of phosphorus into waters of the basin. The ODF plan identifies a process for determining whether forestry practices cause increases in instream phosphorus levels. If monitoring data indicate that an increase above the load allocations is occurring, ODF will then conduct FPA Best Management Practices (BMPs) effectiveness monitoring to determine if additional FPA BMPs are required to control phosphorus. Interim FPA program changes and, if needed, permanent changes will be proposed to the Board of Forestry for adoption and implementation. The ODF Plan will meet the TMDL compliance date as stipulated in the ODF compliance schedule (Attachment A-1).
2. **Rejection:** The ODF plan outlines a step-by-step process to further study and monitor the movement of phosphorus into the waters of the basin. However, the plan does not identify any additional FPA Best Management Practices (BMPs) that are needed now or in the future with the projected large increase in harvesting within the basin. The plan does outline a process to eventually, if needed, put into place interim FPA program changes and, if needed, permanent changes which will be proposed to the Board of Forestry for adoption and implementation. The plan outlines a process to identify the additional BMPs that may be required to meet the load allocations. This process may result in not meeting the June 30, 1993 compliance date.
 3. **Approval For Limited Duration:** Approval of the ODF plan for seven to eight months. ODF would be directed to complete the Nutrient Control Strategy Study, the Compliance Monitoring (with additional forestry instream sampling sites) and the Effectiveness Monitoring by December, 1991 and report to the Commission the findings. The Department and Commission would then evaluate the study and monitoring results to determine whether additional FPA BMPs are needed now and in the future given the projected increased harvest levels. The ODF plan would need to be re-approved in June, 1992 by the Commission with appropriate conditions. If the Commission approves the plan, as currently written, for a limited duration, the TMDL compliance date may not be met, depending on the compliance schedule dates approved by the Commission.

Agriculture (ODA) Plan.

- 1. Approval:** The Tualatin River Basin Agriculture (ODA) Plan has sufficiently met many, but not all, of the TMDL program conditions. Therefore, the plan could only be conditionally approved. ODA would be directed to develop permanent funding and both a mandatory compliance and enforcement program for erosion and nutrient control in order to fully implement the agriculture plan. The ODA plan would also need to be revised to include an accelerated enforcement program, administered by ODA, of CAFOs from the existing complaint driven system to an aggressive inspection and enforcement regime. Stipulations that application of riparian vegetative buffers and filter strips be required where streambank erosion is a recognized problem would also need to be included in the ODA plan in order to meet conditions for approval. Approval of the ODA plan, as currently written, would in effect allow an extension of the TMDL compliance date.
- 2. Rejection:** The current ODA plan fails to meet some of the most critical TMDL requirements that would ensure that load allocations and the TMDL compliance date is met. The plan fails to identify a mandatory compliance and enforcement program for erosion and nutrient control in the event voluntary actions do not meet the load allocations. Although, the plan identifies these as necessary elements, no specific program is proposed which identifies enforcement authorities. Similarly, the ODA plan does not include a permanent funding source to provide the necessary funds, staff and other resources to implement the plan. With rejection of the plan, the Commission could transfer the agriculture DMA from ODA to the three counties within the Tualatin River Basin. A time schedule for submittal of a plan that addresses all deficiencies would be established. The ODA would be directed to aid the counties in the development of the plan with all authorities for mandatory compliance, enforcement and permanent funding source development placed on the counties. The counties currently have the authority to develop ordinances requiring mandatory compliance and enforcement and to require specific land management practices or farm plans. The plan would also need to be revised to require the application of riparian vegetative buffers and filter strips where streambank erosion is a recognized problem. An accelerated CAFO compliance program, administered by ODA, would also be included in the plan. The counties could also develop a permanent funding source through the formation of a rural Surface Water

Management District, similar to the urban districts. The counties would need some time to develop plans and ordinances which would most likely result in not meeting the TMDL compliance date. The Commission would have to approve the Counties/ODA developed revised plan at a later specified time.

3. **Approval For Limited Duration:** Approve the ODA plan for one year until June, 1992. ODA would implement a voluntary compliance program for erosion and nutrient control and would conduct instream water quality monitoring and possibly other monitoring to determine the effectiveness of voluntary efforts. A report of the monitoring results would be submitted by ODA to the Department on February 1, 1992. The Department would then determine whether the voluntary program was effective in meeting the load allocations and report to the Commission in June, 1992. If it is determined by the Department that the voluntary compliance program is ineffective, the Commission would need to re-approve or modify the plan with the possible designation of a new DMA(s). ODA would also be directed to work with Washington, Clackamas and Multnomah County to develop mandatory compliance and enforcement ordinances which would be implemented by the counties by January, 1993, if voluntary compliance did not work. The ODA plan would have to be revised to include an accelerated enforcement program of the CAFO program, administered by ODA. The ODA plan would also include a stipulation that application of riparian vegetative buffers and filter strips be elevated from a recommended practice to a required practice where streambank erosion is a recognized problem. A permanent funding source(s) program would be developed by the DMA and permanent funding and staffing needs obtained by the counties by November, 1992. The TMDL compliance date would be met with a limited duration approval of the plan and the adoption of the Tualatin Basin Agriculture Watershed Management Plan compliance schedule for completion and implementation of the plan (Attachment B-1).

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

While a few issues (as noted below and discussed in greater detail in Attachments A and B) have proven particularly hard to resolve to the Department's complete satisfaction, the Department now feels it is time for approval of the ODF and for a limited duration approval of the ODA plans for the following reasons:

- a. All key issues have either already been or will be addressed to ensure compliance with the load allocations and the compliance date;
- b. Each plan identifies the necessary control measures that are adequate to control the relative levels of contributed phosphorus pollution;
- c. It is time to move forward from plan development to implementation;
- d. ODF has established a logical step-by-step process for further identifying the instream total phosphorus levels, the possible sources and the required, if necessary, additional FPA BMPs to control nonpoint source pollution; and
- e. ODA has identified all the sources, the necessary control measures and has outlined possible mandatory compliance, enforcement mechanisms and permanent funding sources but needs additional time to implement a voluntary compliance program and to aid the counties to develop and implement mandatory compliance and enforcement ordinances and obtain permanent funding source(s), if voluntary compliance is ineffective.

Therefore, the Department recommends that the Commission:

1. Forestry (ODF) Plan.

Approve the ODF watershed management plan for the forest land uses in the basin and adopt the ODF compliance schedule for the implementation of the plan -- Attachment A-1.

All of the 13 conditions for approval listed in the Department's August, 1990 Staff Report have now been addressed. Staff's concerns with the November, 1990 ODF draft plan were that it lacked (a) clearly defined management objectives, tasks and target dates, (b) specific information on staff and funding needs and other necessary resources required to implement the plan, and (c) the development of an effectiveness monitoring program. ODF, after extensive discussions with Department staff and members of the Technical Specialists Panel, has adequately addressed these issues in the current version of the management plan.

2. Agriculture (ODA) Plan.

Approve, for a period of one year, the ODA watershed management plan for the agricultural land uses in the basin with recommended staff revisions and adopt the ODA compliance schedule for the implementation of the plan -- Attachment B-1. Direct the following be done:

- a. ODA to administer an accelerated enforcement program of all CAFOs located within the basin with each inspected for compliance by June, 1992 and all in compliance by June, 1993;
- b. ODA to administer and implement the Container Nursery Irrigation Water Management Plan Strategy by the dates outlined in the plan which is located in Appendix B of the ODA Plan;
- c. ODA to conduct instream water quality monitoring and possibly other monitoring to determine effectiveness of the voluntary compliance program and report to the Department by February 1, 1992;
- d. the Department to determine the effectiveness of the voluntary compliance program and report to the Commission if ineffective;
- e. the Commission would re-approve or modify the plan by June, 1992 with possible designation of a new DMA(s) if voluntary compliance program is determined to be ineffective;
- f. the Basin Counties of Washington, Clackamas and Multnomah would begin development by March 1, 1992 and implement by January, 1993 mandatory compliance and enforcement ordinances, if voluntary compliance is ineffective; and
- g. the DMA would begin development of a stable funding source(s) by June 1, 1992 and the Basin Counties would obtain permanent funding sources and staffing needs by November, 1992.

Of the 25 conditions for approval listed in the Department's August, 1990 Staff Report, all but three have now been fully developed. Still not resolved to the Department's complete

satisfaction are issues relating to enforcement (condition 7), funding (condition 16), and vegetative buffers (condition 22). Of these, enforcement authority and stable funding are the most important and are addressed by stipulations "c" through "g" above.

Approval for one year would allow implementation of most elements of the ODA plan to move ahead in the short term while, at the same time, allowing ODA and the Basin Counties to continue developing several elements which will be more important in the long term.

Based on its evaluation of current watershed enhancement practice, the Department believes that riparian vegetative buffers are a crucial component in the system of practices which must be employed to control the movement of soil and nutrients into Tualatin River Basin streams. Because the re-establishment of riparian vegetative buffers may restrict the type of agricultural crops grown or types of activities, some of those involved in local implementation of the ODA plan have expressed a preference for applying other practices first to see if they are adequate to achieve water quality goals. The Department would recommend that vegetative buffers be required in the plan where streambank erosion is present.

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

As noted above, review of the watershed management plans is mandated by Commission rule. Also, action on these plans and the resulting continued progress on pollution control efforts in the Tualatin River Basin are consistent with elements of the State/EPA Agreement for fiscal year 1991.

ISSUES FOR COMMISSION TO RESOLVE:

1. Whether to accept, reject, or modify the Department's recommendations for action on the watershed management plans.
2. Whether accepting the ODA plan for a limited duration is an appropriate action for the Commission to take.

INTENDED FOLLOW-UP ACTIONS:

1. The Department will communicate the Commission's actions to ODA and ODF.

Meeting Date: June 14, 1991
Agenda Item: I
Page 11

2. Department staff will participate as necessary in implementation of the plans and in carrying out any conditions or stipulations placed on them by the Commission.
3. Department staff will review ODA's voluntary compliance effectiveness monitoring progress report and prepare a Staff Report to the Commission for the June, 1992 Commission Public Meeting, if voluntary compliance is determined by the Department to be ineffective in meeting instream load allocations.

Approved:

Section: Andrew Z. Wheeler
Division: Sydney Taylor
Director: _____

Report Prepared By: Don Yon, Roger Wood,
Mitch Wolgamott, and
Dennis Ades

Phone: 229-5371 (Yon)

Date Prepared: May 10, 1991

DY:crw
MW\WC8\WC8477
May 10, 1991

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

STAFF REVIEW

TUALATIN RIVER BASIN
WATERSHED MANAGEMENT PLAN

Designated Management Agency: OREGON DEPARTMENT OF FORESTRY

On December 21, 1991, DEQ staff identified many deficiencies in the Revised Draft Oregon Department of Forestry Nonpoint Source Water Quality Management Program Plan for the Tualatin River Basin and recommended that these deficiencies be eliminated or addressed before the Environmental Quality Commission (EQC) approve the plan. This followed an earlier request by the Oregon Department of Forestry (ODF) to the EQC to defer action on a August 10, 1990 Draft Plan and that ODF be allowed to resubmit the plan on November 1, 1990.

Staff's concerns with the November, 1990 ODF draft plan were that it lacked 1) clearly defined management objectives, tasks and target dates, 2) specific information on staff and funding needs and opportunities necessary to implement the plan, and 3) the development of an effectiveness monitoring program. ODF, after numerous discussions with DEQ staff and members of the Technical Specialists Panel, has adequately addressed these issues in the latest (April 19, 1991) revised draft of the management plan.

The Department Staff Review which follows is organized according to the 13 conditions that were described in the August 10, 1990 Staff Report. Each condition is stated and the latest plan revision is then reviewed in the context of the condition.

Condition 1. Explain how the Forest Practices Act (FPA) was selected as the control option, and discuss options, if any, which were considered and rejected.

Review: This condition is adequately addressed in the April 19, 1991 revision.

By statute, the Forest Practices Act program provides the only mechanism for the Board and the Department of Forestry to control the effects of forest management on water quality. The program is intended to recognize regional differences in resource management needs and localized options for the Tualatin River basin may be considered by the Board if deemed necessary. Apparently no additional management options have been considered by the Board to date.

Condition 2. Fully cite and describe the FPA rules, rule guidance documents, directives, and other sources which provide the details for implementation of water quality protection BMPs and other program elements in the Tualatin basin.

Review: This condition was met in the November, 1990 revision.

Condition 3. Describe the process (presumably included within the existing FPA program) by which BMPs and other management measures to protect water quality are selected for different sites and operations. Explain the latitude, if any, which forestry operators have in selecting and applying these BMPs and the Oregon Department of Forestry has in requiring the application of these BMPs by the forestry operators.

Review: This condition was met in the November, 1990 revision.

Condition 4. Explain how the FPA's effectiveness at protecting water quality will be monitored in the Tualatin River basin. The FPA water quality monitoring program should identify the timeline for development and the goals and objectives of the program.

Review: This condition is met in the April 19, 1991 revision.

The goals and objectives of the FPA water quality monitoring program were described in the November, 1990 revision, but specific monitoring activities, funding and timeline information was inadequate. Recent revisions to the draft plan correct these deficiencies.

ODF will continue to monitor the water quality in the Tualatin River and tributaries at sites that compliment the monitoring efforts of other Designated Management Agencies. ODF will also conduct a comprehensive review of the literature, through the Nutrient Control Strategy

Study, for additional information on the effects of forestry operations on water quality with an emphasis on total phosphate. Based on the findings in the literature or trends in the water quality data, it may be necessary for ODF to initiate an effectiveness monitoring program. This additional monitoring effort will investigate the effectiveness of forest practices at controlling the movement of phosphorus into the waters of the basin. ODF has provided in Appendix E of the management plan time schedules, staffing and funding needs for these activities.

Condition 5. Estimate costs (yearly and over the life of the plan) for program elements specific to the Tualatin River and not otherwise funded as part of the FPA program.

Review: This condition is met in Appendix E of the April 19, 1991 Draft Plan.

Condition 6. ODF should identify the staffing requirements in order to develop the watershed forest management plan, to monitor water quality and to adequately enforce BMPs to ensure compliance.

Review: This condition is now met.

Staffing needs to continue existing monitoring activities and the literature review are identified in Appendix E of the April Draft Plan. Staffing requirements for the effectiveness monitoring program can only be determined after the level of effort has been identified. As stated in the review of Condition 4, effectiveness monitoring is contingent upon a demonstrated need.

Condition 7. Discuss other potential funding sources (besides the federal government), including but not limited to (a) state funds, and (b) special assessments or taxes on forest operators.

Review: This condition is addressed.

Ongoing monitoring will be funded out of the current biennial budget. Additional funding for future compliance monitoring and possible effectiveness monitoring may be supported with state funds sought through budget decision packages, special legislative proposals, or the legislative Emergency Board. ODF has also identified other ODF programs and EPA Clean Water

Act Section 319 grants as possible funding opportunities. ODF has secured a cooperative grant from Tualatin River Basin forest land owners to fund the literature review.

Condition 8. A monthly progress report to DEQ (utilizing a one- or two-page form) and a monthly progress meeting with DEQ is included in the Plan.

Review: This condition is adequately addressed.

This report will provide DEQ staff and EQC a means to assess ODF progress in meeting TMDL requirements.

Condition 9. All the above conditions must be included in the Revised Draft Plan and provided to DEQ by November 1, 1990.

Review: This condition was not completely met in the November draft. However, these conditions are adequately addressed in the April 19, 1991 draft.

Condition 10. Within 12 months, the following tasks must be included in a Final Plan and provided to DEQ:

Review: This condition should be completed by August 1991.

Condition 11. ODF should complete a nutrient load control strategy for the forested areas of the Tualatin Basin. The strategy plan should estimate the sources and levels of phosphorus pollution associated with anticipated harvest levels and the Best Management Practices (BMPs) required to control phosphorus pollution to meet the TMDL requirements. Any needed BMPs not already part of the Forest Practices Program should be identified, adopted, and implemented.

Review: This condition is being met.

ODF has identified adequate ambient water quality monitoring and forest practices effectiveness monitoring efforts in Appendices C and E of the April 19, 1991 draft plan to meet the requirements of Condition 11. Appendix C details the feedback process to modify the Forest Practices Act rules with basin-specific management practices as necessary to meet water quality objectives. Interim FPA program changes and, if needed, permanent changes will be proposed to the Board of Forestry for adoption and implementation.

Condition 12. Within 30 days after submission of the Final Plan, DEQ will review the Plan and either certify its compliance with the above conditions or prepare other comments as necessary. Failure of the Plan to meet these conditions will result in action to enforce the provisions of OAR 340-41-470 and/or the interagency agreements resulting therefrom.

Review: This condition is being met.

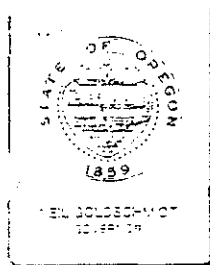
Condition 13. ODF shall join with DEQ in a process to refine and establish a complete TMDL compliance monitoring program for applicable portions of the Tualatin basin (Process to commence within 120 days).

Review: This condition is being met.

ODF has joined DEQ in the process to complete this task.

TUALATIN RIVER BASIN
 OREGON DEPARTMENT OF FORESTRY (ODF) WATERSHED MANAGEMENT PLAN
 COMPLETION AND IMPLEMENTATION SCHEDULE

TASKS	DATES						
	05/91 - 08/91	09/91 - 12/91	01/92 - 04/92	05/92 - 08/92	09/92 - 12/92	01/93 - 04/93	05/93 - 06/93
1. DEQ/ODF Evaluates/Refines Water Quality Monitoring Program.	05/91		03/92			03/93	06/93
2. Instream Water Quality Monitoring Reports by Agreed-Upon Method.	08/91	12/91		08/92	12/92		06/93
3. Completion of Plans:							
a. Complete Nutrient Load Control Strategy.	06/91						
b. Complete Investigative Effectiveness Monitoring, If Needed.				05/92			
c. Winter-Time Phosphorus — Bearing Siltation Validation Monitoring, If Needed.					11/92		
d. TMDL Compliance Monitoring Program.	06/91						
e. DEQ/ODF Evaluates and, if Needed, DEQ Refines Load Allocation.					09/92		
f. Others, As Identified/Agreed to in Monthly Meetings.	05/91 —————>						
4. Implementation Measures:							
a. Current FPA BMPs.	05/91 —————>						
b. Interim FPA Preventive BMPs, if Needed.	12/92 —————>						
c. Permanent FPA BMPs, if Needed and Compliance.	By 06/93						
5. Progress Reports/Monitoring:							
a. Monthly Progress Report Forms to DEQ.	05/91 —————>						
b. Monthly Progress Meetings with DEQ.	05/91 —————>						
6. TMDL Compliance Date.	(06/30/ 93)						



Department of Environmental Quality

311 SW SIXTH AVENUE, PORTLAND, OREGON 97204-1390 PHONE (503) 229-5696

December 21, 1990

Dave Degenhardt
Oregon Department of Forestry
2600 State Street
Salem, Oregon 97310

Re: Tualatin River Basin
Watershed Management
Plan

Dear Mr. Degenhardt:

The draft revised Watershed Management Plan for forestry nonpoint sources in the Tualatin Basin has been reviewed by staff in the Department's Nonpoint Source Program and by the Tualatin Basin Coordinator. We appreciate the work that has gone into the original and current revision. The plan is improved in a few areas. We also appreciate the difficulties you are working under. However, our review has revealed there are still deficiencies in many critical areas which must be addressed before the Department can recommend approval to the Environmental Quality Commission (EQC).

The Commission direction at the August 10, 1990 EQC meeting was clear. The staff report listed 13 conditions which must be met before the plan can be approved. The revised plan does meet a few of the conditions. However, those remaining conditions, which are not adequately addressed, are critical to the success of the plan. The deficiencies are primarily in three areas: 1) The plan lacks clearly identified objectives, action items, and mile posts. 2) The plan needs to identify or project development of resources. 3) The plan does not identify a specific instream water quality and a BMPs and FPA's effectiveness monitoring program.

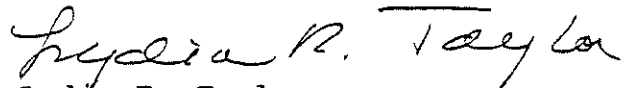
The Oregon Department of Forestry (ODF) Tualatin River Basin Watershed Management Plan is incomplete and therefore will most likely not meet the Total Maximum Daily Load (TMDL) requirements by the June 30, 1993 compliance date. ODF should complete the plan by March 1, 1991. Failure to complete the plan meeting the remaining conditions by March 1, 1991 will result in a staff recommendation to the June 1991 EQC Meeting of a plan rejection and the issuance of a Commission Compliance Order. Failure to comply with the Commission Order may result in a formal enforcement action and possibly a civil penalty assessment.

Dave Degenhardt
December 12, 1990
Page 2

In the event that there are conditions which will not be met, please provide reasons and propose alternative actions. If there is sufficient rational, the Department can recommend that the EQC approve the plan even though some conditions are not completely resolved. Be advised, however, that the Department believes the deficiencies discussed above are basic requirements that are necessary in any planning document.

A detailed review of the plan, with respect to each of the 13 conditions, is enclosed. If you have questions about the review please feel free to call Don Yon, Tualatin Basin Coordinator (229-5371). He, or members of the nonpoint source program will be available to work with your staff to clarify the details of the review as needed.

Sincerely,



Lydia R. Taylor
Administrator
Water Quality Division

LT:DRY:crw
MW\WC7589
Enclosure

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

STAFF REVIEW

DRAFT REVISED
TUALATIN RIVER BASIN
WATERSHED MANAGEMENT PLAN

Designated Management Agency: OREGON DEPARTMENT OF FORESTRY

On August 10, 1990 the Environmental Quality Commission (EQC) reviewed the Tualatin River Watershed Management Plans for control of nonpoint source (NPS) pollution. These planning documents are required by OAR 340-41-470(3) which set total daily maximum loads (TMDLs) for the Tualatin. The plans are intended to demonstrate how the agencies involved will meet the load allocations assigned to NPS categories. Among the documents reviewed was the plan for control of NPS pollution resulting from forestry operations in the Tualatin River Basin. This plan was prepared and submitted by the Oregon Department of Forestry (ODF).

After considering the Department of Environmental Quality (DEQ) staff report which reviewed the plan, the EQC accepted the Department's recommendation to defer action. This recommendation was based on a request from ODF that they be allowed to resubmit the plan on November 1, 1990. The Department recommendation for deferral included 13 conditions for approval.

The revised plan, titled Draft Revised, Oregon Department of Forestry Nonpoint Source Water Quality Management Program Plan for the Tualatin River Basin, was received by the Department on November 7, 1990. Although some (4) of the 13 conditions have been met, all the most critical conditions have not been met which leaves the plan incomplete and without an adequate action plan for implementation.

The reason for the selection and description of the Forest Practices Act (FPA) as the best management practices (BMPs) and best management systems is more fully (and adequately) described. The process forestry operators use in selecting and applying BMPs and how ODF requires the application of these BMPs by the forestry operators is also fully described. A number of possible funding sources/options are identified. These improvements address only a few of the concerns the Department expressed in the August 10, 1990 Staff Report.

However, there are still deficiencies in critical areas which must be addressed before the Department can recommend approval of the plan by the EQC. These deficiencies are primarily in three areas:

1. Objectives, tasks, and target dates.

The plan still lacks clear, measurable objectives and action items that will be implemented by specified target dates. Specifically, ODF has not identified a longterm water quality and FPA BMPs effectiveness monitoring program. Given that currently most streams within the forested portions of the Tualatin Basin are meeting the load allocations, ODF does not need to do much work in near future to reduce phosphorus levels. However ODF must develop a nutrient load control strategy plan that would estimate the sources and levels of phosphorus pollution associated with anticipated harvest levels, that identifies the BMPs required to control phosphorus pollution to meet the TMDL requirements and that also identifies any needed BMPs not already part of the Forest Practices Program which should be adopted and implemented. The implementation schedule does not include interim dates by which specified targets are intended to be accomplished. The intent of this requirement is to provide a clear map of where the plan is headed and what "mileposts" will be passed along the way to achieving the goal of "that forest resources are managed to meet federal and state water quality requirements." Without these "mileposts" it will be impossible to track progress during implementation of the plan. Without tracking progress it will not be possible to make mid-course corrections in the event that implementation of specific tasks do not have the desired result.

2. Funding and Staffing.

Although the revised plan includes a discussion of potential funding sources, it does not identify which of these sources will be selected and the time frame for obtaining the funds. The revised plan also identifies the need for a stable on-going funding source or sources but none are specified. In order for ODF to complete the necessary tasks for development and implementation of the plan, to monitor water quality and BMPs effectiveness and to adequately enforce BMPs to ensure compliance, an adequate staffing level must be provided. The plan only identifies the immediate but not the longterm, overall, staffing requirements. Again, the information required here is necessary to track progress.

3. Water Quality and FPA's BMPs Effectiveness Monitoring.

A critical task for ODF to complete is the development and implementation of a water quality and FPA's BMPs effectiveness monitoring program. The revised plan does not identify how the FPA's effectiveness at protecting water quality will be monitored. A specific water quality monitoring program for the Tualatin Basin is not fully described, not funded and no timeline for its development or implementation is provided. ODF does state that a monitoring program will be identified after consultation with the Technical Specialists Panel (TSP). The purpose of the TSP is to provide technical information only with no real decision making authority. ODF is required by the EQC to prepare a plan meeting the conditions set forth in the August 10, 1990 Staff Report.

The detailed Department Staff Review which follows is organized according to the 13 conditions that were described in the August 10, 1990 Staff Report. The condition is first stated exactly as it was worded in the Staff Report. The current plan revision is then reviewed in the context of the condition.

Condition 1. Explain how the FPA was selected as the control option, and discuss options, if any, which were considered and rejected.

Review: This condition is partially met in the November 1990 revision.

The revised draft identifies why the FPA was selected as the control option, but does not discuss whether options were considered and rejected.

Condition 2. Fully cite and describe the FPA rules, rule guidance documents, directives, and other sources which provide the details for implementation of water quality protection BMPs and other program elements in the Tualatin basin.

Review: This condition is met in the November 1990 revision.

The Forest Practices Act and the Forest Practice Rules are fully described. However, no additional BMPs are identified as being needed. (See also Condition # 11 Review).

Condition 3. Describe the process (presumably included within the existing FPA program) by which BMPs and other management measures to protect water quality are selected for different sites and operations. Explain the latitude, if any, which forestry operators have in selecting and applying these BMPs and the Oregon Department of Forestry has in requiring the application of these BMPs by the forestry operators.

Review: This condition is met in the November 1990 revision.

Condition 4. Explain how the FPA's effectiveness at protecting water quality will be monitored in the Tualatin basin. The FPA water quality monitoring program should identify the timeline for development and the goals and objectives of the program.

Review: This condition has not been met.

The goals and objectives of the FPA water quality monitoring program is described. However, a specific monitoring program for the Tualatin basin is not fully described, not funded and no timeline for its development is provided. Consultation with the Nonpoint Source Technical Specialist Panel (TSP) is identified as the "first step" in recommending to the Oregon Department of Forestry effectiveness monitoring schemes. The revised plan states: "When the TSP makes its recommendations, ODF will be able to assess the resources and costs of an appropriate effectiveness monitoring program for the Tualatin River Basin." The TSP is a technical review panel and does not provide policy recommendations. ODF is required by the EQC to prepare a plan meeting all conditions set forth in the August 10, 1990 Staff Report by the dates specified.

Condition 5. Estimate costs (yearly and over the life of the plan) for program elements specific to the Tualatin and not otherwise funded as part of the FPA program.

Review: This condition has not been met.

The costs for development and implementation of the plan are not provided in detail and what costs are provided are confusing. Specifically, the cost for compliance monitoring (sampling) for 1990 are identified as \$1,300 in Appendix C and \$3,000 on page 25 of the plan. The text states that all unfunded water quality activities will be postponed. However, Appendix C provides

estimates of unfunded costs as of November 1, 1990. It is confusing to know which activities are being completed and which are not because they are unfunded costs. The revised plan further states: "The costs specific to NPS control in the Tualatin River Basin will not be complete until solutions to the technical difficulties are obtained load allocation refinements are made and monitoring schemes are developed." ODF must develop an overall stable funding source and identify the costs for the development and implementation of the plan.

Condition 6. ODF should identify the staffing requirements in order to develop the watershed forest management plan, to monitor water quality and to adequately enforce BMPs to ensure compliance.

Review: This condition has not been met.

A final staffing requirement list has not yet been developed pending completion of other portions of the plan. ODF must develop a final overall staffing requirement list necessary for the completion of the plan, to monitor water quality and to adequately enforce BMPs. Without a stable and adequate program staff, ODF will not be able to meet the Tualatin Basin TMDL requirements.

Condition 7. Discuss other potential funding sources (besides the federal government), including but not limited to (a) state funds, and (b) special assessments or taxes on forest operators.

Review: This condition has not been adequately addressed.

Other potential funding sources are described but a stable on-going funding source or sources is identified as being needed but none are identified. The revised draft also notes the following: 1.) "Unfunded water quality activities will be postponed." and 2.) "The current operating budget will continue to provide a functioning program for managing water quality during forest operations." It is imperative that ODF identify and develop a stable on-gong funding source in order have an adequate staff to complete the plan, to conduct the required water quality and BMPs effectiveness monitoring program, and to implement the plan.

Condition 8. A monthly progress report to DEQ (utilizing a one- or two-page form) and a monthly progress meeting with DEQ is included in the Plan.

Review: This condition has not been adequately addressed.

ODF will not be providing a monthly progress report to DEQ but will provide a semi-annual report and has offered to consult with DEQ staff at any time if they wish to maintain a monthly log of progress. ODF must provide a monthly progress report as is required by all other Designated Management Agencies within the Tualatin Basin. The two-page monthly progress report form only takes a few minutes to prepare and for the sake of fairness to all other entities must be completed by the ODF. This report will also provide DEQ staff and EQC a means assess progress being made by all entities, including ODF, in meeting TMDL requirements.

Condition 9. All the above must be included in the Revised Draft Plan and provided to DEQ by November 1, 1990.

Review: This condition has not been met.

The Revised Draft Plan was received by DEQ on November 7, 1990. The Revised Draft Plan is only partially completed with not all of the above tasks completed and included in the plan.

Condition 10. Within 12 months, the following tasks must be included in a Final Plan and provided to DEQ:

Review: The completion of this condition must be done by August 1991.

Condition 11. ODF should complete a nutrient load control strategy for the forested areas of the Tualatin Basin. The strategy plan should estimate the sources and levels of phosphorus pollution associated with anticipated harvest levels and the Best Management Practices (BMPs) required to control phosphorus pollution to meet the TMDL requirements. Any needed BMPs not already part of the Forest Practices Program should be identified, adopted, and implemented.

Review: This condition may not be met.

The revised draft plan identifies in Appendix C that a nutrient control strategy study is either being conducted or is budgeted for future completion. It is unclear as to whether the study is being conducted at this time or when it is planned in meeting this condition. See review response to Condition 5.

Condition 12. Within 30 days after submission of the Final Plan, DEQ will review the Plan and either certify its compliance with the above conditions or prepare other comments as necessary. Failure of the Plan to meet these conditions will result in action to enforce the provisions of OAR 340-41-470 and/or the interagency agreements resulting therefrom.

Review: This condition has not been met.

The revised draft plan as submitted by ODF fails to comply with many of the above conditions by not completing many of the required tasks. ODF does, for most uncompleted conditions, describe the reasons for not completing the conditions and how they will be completed. However, a timeline for their completion is not provided. For all of the uncompleted conditions ODF has tied their completion with consultation and recommendations being provided by the TSP. The purpose of the TSP is to provide technical information only with no real decision making authority. ODF is required by the EQC to prepare a plan meeting the above conditions by the dates specified. Completion of the plan may involve consultation with the TSP but must not be tied to their schedule. ODF must utilize whatever resources are available, including their own staff and possibly outside consultants, to complete the plan by the required completion dates. The ODF Tualatin River Basin Watershed Management Plan is incomplete and therefore will most likely not meet the TMDL requirements by the June 30, 1993 compliance date. ODF should complete the plan by March 1, 1991. Failure to complete the plan meeting the above conditions by March 1, 1991 will result in a staff recommendation to the June 1991 EQC Meeting of a plan rejection and the issuance of a Commission Compliance Order. Failure to comply with the Commission Order may result in a formal enforcement action and possibly a civil penalty assessment.

Condition 13. ODF shall join with DEQ in a process to refine and establish a complete TMDL compliance monitoring program for applicable portions of the Tualatin basin (Process to commence within 120 days).

Review: This condition is being met.

ODF has joined DEQ in the process to complete this task.

NOTICE

**THE FULL TEXT OF THE FORESTRY PLAN IS NOT INCLUDED, BUT IS
AVAILABLE UPON REQUEST.**

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

STAFF REVIEW

TUALATIN RIVER BASIN
WATERSHED MANAGEMENT PLAN

Designated Management Agency: OREGON DEPARTMENT OF AGRICULTURE

On August 10, 1990 the Environmental Quality Commission (EQC) reviewed the Tualatin River Watershed Management Plans for control of nonpoint source (NPS) pollution. These planning documents are required by OAR 340-41-470(3) which set total daily maximum loads (TMDLs) for the Tualatin. The plans are intended to demonstrate how the agencies involved will meet the load allocations assigned to NPS categories. Among the documents reviewed was the plan for control of NPS pollution resulting from agricultural and rural residential lands in the Tualatin River Basin. This plan was prepared and submitted by the Oregon Department of Agriculture (ODA) and the Washington County Soil and Water Conservation District. After considering the staff report which reviewed the plan, the EQC accepted the Department's recommendation to defer action. This recommendation was based on a request from ODA that they be allowed to resubmit the plan on November 1, 1990. ODA recognized that substantial revisions to the plan were necessary and expressed a preference that the Department and the EQC wait to evaluate the revised plan rather than take action on the available document. The Department recommendation for deferral included 25 conditions for approval.

The revised plan, titled Tualatin River Watershed Management Plan, A Plan for Controlling Rural Nonpoint Source Pollution, was received by the Department on November 13, 1990. It was evident that a great deal of effort had gone into the revised document. However, a detailed DEQ staff review completed on December 10, 1990 determined there were still deficiencies in critical areas which had to be addressed before the Department could recommend approval of the plan by the EQC. These deficiencies were primarily in two areas:

1. Objectives, tasks, and target dates. The plan lacked clear, measurable objectives and action items that would be implemented by specified target dates. The intent of this requirement is to provide a clear map of where the plan is headed and what "mileposts" will be passed along the way to

achieving the goal of "restoration of the waters of the basin to a level of quality that will protect and preserve their beneficial uses." Without these "mileposts" it will be impossible to track progress during implementation of the plan. Without tracking progress it will not be possible to make mid-course corrections in the event that implementation of specific tasks does not have the desired result.

2. Resources. Although the revised plan included projected costs and a good discussion of potential funding sources/options, it did not identify which of these options would be pursued and in what time frame. Again, the information required here is necessary to track progress.

An additional concern was that the plan relied entirely on voluntary compliance. It did briefly discuss some potential alternatives but did not explore means of enforcement and necessary authority. It did not state whether any of the alternatives would be pursued or supported if enforcement became necessary.

The Department staff review was provided to ODA in mid-December along with a request that ODA make further revisions to the plan by March 1, 1991. This request was complied with and Department staff again reviewed the plan. Improvements in the plan were again noted. However, there were still concerns in the areas of resources and enforcement. Representatives of ODA and DEQ met on April 16, 1991 to discuss the remaining concerns. Following that meeting ODA made final revisions to the plan and submitted the current draft which was received by the Water Quality Division on May 2, 1991.

The detailed Department Staff Review which follows is organized according to the 25 conditions that were originally described in the August 10, 1990 Staff Report. The condition is first stated exactly as it was worded in the Staff Report. The current plan revision is then reviewed in the context of the condition.

Condition 1. The Oregon Department of Agriculture, the designated management agency for the agricultural watershed management plan for the Tualatin Basin, shall assume full responsibility for modifying the plan according to the following instructions:

Review: Condition was met in the November 1990 revision.

Condition 2. Describe problems in terms of the agricultural land use practices which cause them (for example: streambank erosion resulting from riparian zone vegetation removal). These descriptions will eventually have to include detail on both location and severity before management measures can be prescribed, funded, and applied.

Review: Condition was met in the November 1990 revision.

The revised plan includes a thorough, well written, discussion of potential NPS water pollution problems associated with agricultural land use practices (Section I, Chapter III). Ultimately, additional details on location and severity of specific problems will be necessary. However, that detailed information is not necessary at this level of planning and may not be available at this time. A schedule identifying when more detailed information will be developed would be useful.

Condition 3. Collect all program elements together in one complete list. The seven elements listed in the "SWCD Strategy..." section come close to being such a list, but do not include information and education, review and adjustment, fund raising, interagency agreements and relationships, and other program elements which are developed elsewhere in the plan. Where applicable, explain which of the program elements address which of the identified problems.

Review: Condition was met in the November 1990 revision.

Condition 4. Specify the action items, work tasks, and other true objectives of the plan. The absence of such objectives, or their dispersal in a way that makes them hard to identify, is the principal weakness of the plan and manifests itself throughout. For example: The options identified in the "Information and Education" section should be expanded to indicate tasks, time lines, products, estimated costs, and responsible parties. If the implementation details of a task or objective are uncertain at this time, explain why and describe a process and a time line for development of further detail.

Review: This condition is met in the current draft.

Clear objectives are provided in Section I., Chapter IV. Control Strategies. A good and detailed list of tasks related to each objective, including target dates, is provided in Section II., Chapter V. Project Schedule.

Condition 5. Group objectives according to the control option or program element they serve. For example: The seven items listed in the "SWCD Strategy.." section are sub-goals or major program elements of the plan, and each could serve as a heading under which a number of specific tasks or objectives may be grouped.

Review: This condition is met in the current draft in the sections mentioned under condition 4 above.

Condition 6. Describe how the variety of available BMPs, management measures, and tasks will be selected and applied to address particular site-specific problems. If land owners and managers will make these selections, explain what considerations will guide them. Also explain the considerations used by cost-share funding sources in setting priorities for allocation of available funds in the basin.

Review: Condition was met in the November 1990 revision.

The section on best management practices and best management systems combined with Appendix C and the discussion of control options provide adequate information to meet this requirement.

Condition 7. Discuss optional courses of action in the event that voluntary participation is inadequate and enforcement is necessary. Identify the means of enforcement of the required BMPs, the responsible entity(s), the necessary authority, and the staffing and funding sources.

Review: This condition is minimally addressed.

It was stated in the review of the November 1990 draft that this condition was only minimally addressed. The current draft contains a much expanded and improved discussion of enforcement beginning on page 52. However, the intent of the condition, which is to identify a recommended mechanism of ensuring that agricultural load allocations are met even if voluntary participation proves inadequate, is still only minimally addressed.

The current draft does clearly state that if voluntary compliance fails then "more aggressive means of ensuring compliance ... will be employed." It does not clearly explain what those means will be. The plan does say that compliance status will be assessed by the end of

the summer of 1992. If load allocations for agriculture are not being met at that time then enforcement of regulations related to confined animal feeding operations (CAFO) will be accelerated by shifting from the existing complaint driven system to an aggressive inspection and enforcement regime. Likewise, enforcement of the Container Nursery Irrigation Water Management Plan will be accelerated. This should ensure that these two categories of agricultural operations are in compliance by the June 1993 TMDL compliance date. Other categories of agricultural operations are not addressed. Other categories in the Tualatin Basin include: Field crops & vegetables, fruit trees & nuts, small fruits & berries, vineyards Christmas trees, grass & legume seed, hay/silage.

Simultaneously with the increased enforcement of CAFO and container nurseries regulations, ODA will "explore and examine the range of possibilities for various enforcement mechanisms." Recommendations for preferred enforcement mechanisms will be developed before the deadlines for submitting legislation to the 1993 Legislative session. The plan does not identify a recommended mechanism at this time. Because the plan implies that legislation would be necessary before enforcement for other categories of operations would occur (rather than relying on existing authorities in the counties) it appears that compliance of agriculture cannot be assured by the June 1993 TMDL compliance date. The plan does not provide for contingencies in the event that legislation is not passed. Therefore, compliance is not even assured at some point after June of 1993.

Condition 8: Explain how the "first approximation" of conservation needs (page 32) was arrived at, and why those particular BMPs were selected to use in the needs estimate.

Review: Condition was met in the November 1990 revision.

Condition 9: Describe more fully the BMP descriptions and other guidance documents and directives available in the SCS Field Office Technical Guide. Include in the plan a few excerpts or examples from the SCS Guide to illustrate the information available on a particular BMP or management system approach.

Review: Condition was met in the November 1990 revision.

Although the plan does not include excerpts from the SCS Guide, the more complete discussions under the Control Strategies section of the current revision adequately meet the intent of this condition.

Condition 10: In the plan's list of BMPs, identify each one also by the SCS code or designations, if applicable.

Review: Condition was met in the November 1990 revision.

Condition 11: Identify the agency (or agencies) responsible for implementation of the program, and describe specific roles and responsibilities.

Review: Condition was met in the November 1990 revision.

Condition 12: Describe the "master plan" and "annual action plan" mentioned in the plan in terms of: (a) purpose and use, (b) content, and (c) process for development and review.

Review: Condition was met in the November 1990 revision.

Condition 13: Using a more fully developed set of program objectives and tasks, expand the implementation schedule to show interim targets or "mileposts."

Review: This condition is partially met in the current draft. The plan implementation schedule should identify when staff will be hired, and when a permanent funding source will be obtained. The schedule should also outline the process and dates when voluntary compliance will move to mandatory, if needed. ODA should identify when all needed authorities will be obtained. If ODA is unsuccessful in obtaining needed authorities, the schedule should identify when ODA will transfer the implementation and enforcement of the plan to the counties within the basin or others who have the authority.

Condition 14: Describe public involvement in plan review and adjustment.

Review: This condition is minimally, but adequately, addressed.

A schedule of when the "periodic reviews of the plan and results of actions taken..." will occur would be helpful. There should be some form of report which documents the outcome of the reviews.

Condition 15: Describe the program objectives or other assumptions underlying the detailed program administration budget. It is understood that the three funding scenario's identified in the plan imply different levels of effort and achievement. This should be described in terms of the specific objectives and tasks which can be accomplished at each funding level.

Review: Condition was met in the November 1990 revision.

Condition 16: Expand the discussion of potential funding sources to address: (a) the particular characteristics, program preferences, or funding criteria of each, (b) amounts of funds potentially available, (c) conditions typically placed on the funds, and (d) tasks for further investigation or applying to these sources of funds.

Review: This condition is minimally addressed in the current draft.

The plan fails to identify a stable funding source to supply resources to operate a base level program. It does, however, acknowledge the need for stable funding to provide staff to ODA and Washington County SWCD and support for implementation in the other Tualatin River Basin SWCDs to carry out the plan. It commits ODA and the cooperating agencies to work towards developing a stable funding source although it does not identify specific tasks related to this function in the project schedule. In the short term, ODA will support legislation in the current session that could help provide necessary resources. If efforts to pass legislation fail then ODA, and the cooperating agencies, will continue to seek stable funding during 1991/92. The plan identifies sources that will be explored including: Washington and other counties transfer of funds for rural implementation, formation of a water quality management district in all counties with the ability to collect fees. If by October of 1992 stable funding has not been secured ODA will begin coordinating efforts to introduce necessary legislation in the 1993 legislative session. The plan also provides an extensive list of cost-share, grant and loan programs available to the agricultural community.

Condition 17: If adequate funding sources are not available for the types of funding assistance programs outlined, explain what steps will be taken to require individual agricultural operators to implement the required BMPs to ensure compliance with TMDL goals.

Review: As with condition 16 above, this condition is minimally addressed.

Condition 18: Describe a process for regular periodic reporting of program implementation results.

Review: Condition was met in the November 1990 revision.

Condition 19: Discuss interagency agreements necessary for program implementation. Reiterate in one location the opportunities for interagency cooperation mentioned throughout the plan.

Review: Condition was met in the November 1990 revision.

Condition 20: Complete the container nursery water quality protection program now under development, and incorporate into the plan.

Review: Condition was met in the November 1990 revision.

Condition 21: A monthly progress report to DEQ (utilizing a one- or two-page form) and a monthly progress meeting with DEQ shall be included in the plan.

Review: Condition was met in the November 1990 revision.

Condition 22: Include provisions for the protection of all streams, wetlands, and ponds with adequate (preferably 100 feet) undisturbed buffers, as measured from the normal high water flow, on all sides.

Review: This condition is minimally addressed in the current draft.

While the current draft does not have an out right requirement for protection of waters with buffer strips, it does include a good discussion of riparian area management including recommended practices. Protection of all riparian areas is recommended (but not required) along with the use of filter strips. Soil Conservation Service guidance on design is referenced. Where streambank erosion is a recognized problem it is stated that re-establishment of streambank vegetation and use of filter strips is strongly recommended and may become a requirement if voluntary implementation of the plan does not result in compliance with load allocations.

Condition 23: All of the above must be included in a Final Plan and provided to DEQ by November 1, 1990.

Review: This condition was not met by November 1, 1990, but is met in the current version of the plan.

Condition 24: Within 30 days after submission of the Final Plan, DEQ will review the Plan and either certify its compliance with the rules or prepare other comments as necessary. Failure of the Plan to meet these conditions will result in action to enforce the provisions of OAR 340-41-470 and/or the interagency agreements resulting therefrom.

Review: This condition was met.

Condition 25: Identify the appropriate responsible agency to join with DEQ in a process to refine and establish a complete TMDL compliance monitoring program for applicable portions of the Tualatin Basin (process to commence within 120 days).

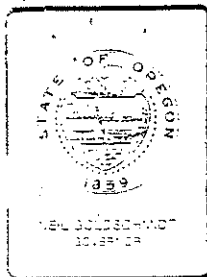
Review: The condition was met.

TUALATIN RIVER BASIN
OREGON DEPARTMENT OF AGRICULTURE (ODA) WATERSHED MANAGEMENT PLAN
COMPLETION AND IMPLEMENTATION SCHEDULE

TASKS	DATES						
	05/91 - 08/91	09/91 - 12/91	01/92 - 04/92	05/92 - 08/92	09/92 - 12/92	01/93 - 04/93	05/93 - 06/93
<p>A. Confined Animal Feeding Operation (CAFO) Program Administered by ODA:</p> <p>1. All CAFOs Inspections Completed.</p> <p>2. CAFO Compliance.</p>				06/92			06/93
<p>B. Container Nursery Program Administered by ODA:</p> <p>1. Letter of Intent Filed by Operators to ODA.</p> <p>2. Facilities with No Discharges, Submit Statement to ODA.</p> <p>3. Facilities with Discharges after 05/1/92, Submit Water Management Plan to ODA.</p> <p>4. ODA Approve Plans.</p> <p>5. Facilities with Discharges After 6/1/93, Obtain WPCF Permit from DEQ.</p>	07/15/91	07/15/91	02/1/92	05/1/92			By 06/1/93
<p>C. Tualatin Agriculture Plan -- Other Nutrient & Erosion Controls:</p> <p>1. ODA Conducts Instream Monitoring to Determine Vol. Compliance Effectiveness & Reports to DEQ.</p> <p>2. DEQ Evaluation of Voluntary Compliance Effectiveness.</p> <p>3. Basin Counties' Mandatory Compliance & Enforcement Ordinances -- Begin Development.</p> <p>4. EQC Plan Re-Approval or Modification if Vol. Compliance Determined Non-Effective & Assign New DMA(s), If Needed.</p> <p>5. 319 Funding Transferred to New DMA(s), If Necessary.</p> <p>6. Permanent Funding Source(s) Developed by DMA -- Begin Development.</p> <p>7. Subbasin Plans & Special Studies Completed by DMA.</p> <p>8. Permanent Funding Source(s) and Staffing Needs Obtained by Basin Counties.</p>			02/1/92	03/1/92	06/92	06/1/92	By 10/92 By 11/92

TUALATIN RIVER BASIN
 OREGON DEPARTMENT OF AGRICULTURE (ODA) WATERSHED MANAGEMENT PLAN
 COMPLETION AND IMPLEMENTATION SCHEDULE
 (Continued)

TASKS	DATES						
	05/91 - 08/91	09/91 - 12/91	01/92 - 04/92	05/92 - 08/92	09/92 - 12/92	01/93 - 04/93	05/93 - 06/93
9. Mandatory Compliance & Enforcement Ordinances Approved & Implemented by Basin Counties. 10. Other Tasks, As Identified/Agreed to in Monthly Meetings by DMA/Counties.	05/91					By 01/93	
D. Monitoring/Progress Reports by ODA/Basin Counties:							
1. DEQ/ODA/Counties Evaluates/Refines Water Quality Monitoring Program.	05/91		03/92			03/93	06/93
2. Instream Water Quality Monitoring Reports by Agreed-Upon Method.	07/91	11/91		08/92	12/92		06/93
3. TMDL Compliance Monitoring Program.	05/91 →						
4. DEQ/ODA/Counties Evaluates and, If Needed, DEQ Refines Load Allocation.	09/92						
5. Monthly Progress Report Forms to DEQ.	05/91 →						
6. Monthly Progress Meetings with DEQ.	05/91 →						
E. TMDL Compliance Date.							06/30/93



Department of Environmental Quality

811 SW SIXTH AVENUE, PORTLAND, OREGON 97204-1390 PHONE (503) 229-5696

December 21, 1990

John Mellot, Administrator
Natural Resources Division
Oregon Department of Agriculture
635 Capitol Street, NE
Salem, Oregon 97310-0110

Re: Tualatin River Basin
Watershed Management
Plan

Dear Mr. Mellot:

The revised Watershed Management Plan for Agricultural nonpoint sources in the Tualatin Basin has been reviewed by staff in the Department's Nonpoint Source Program and by the Tualatin Basin Coordinator. We appreciate the hard work that has gone into the current revision. The plan is much improved in a number of areas. We also appreciate the difficulties you are working under. Unfortunately, our review has revealed there are still deficiencies in critical areas which must be addressed before the Department can recommend approval to the Environmental Quality Commission (EQC).

The Commission direction at the August 10, 1990 EQC meeting was clear. The staff report listed 25 conditions which must be met before the plan can be approved. The revised plan does meet most of the conditions. However, those few remaining conditions, which are not adequately addressed, are critical to the success of the plan. The deficiencies are primarily in two areas: 1) The plan lacks clearly identified objectives, action items, and mile posts. 2) The plan does identify potential funding options but does not indicate which options will be pursued.

The Oregon Department of Agriculture (ODA) Tualatin River Basin Watershed Management Plan is incomplete and therefore will most likely not meet the TMDL requirements by the June 30, 1993 compliance date. ODA should complete the plan by March 1, 1991. Failure to complete the plan meeting the remaining conditions by March 1, 1991 will result in a staff recommendation to the June 1991 EQC Meeting of a plan rejection and the issuance of a Commission Compliance Order. Failure to comply with the Commission Order may result in a formal enforcement action and possibly a civil penalty assessment.

John Mellot, Administrator
December 18, 1990
Page 2

In order for each of our agencies to be assured that all conditions are addressed, please highlight changes to the text and/or include a cover letter that identifies where each condition is addressed in the next revision. In the event that there are conditions which will not be met, please provide reasons and propose alternative actions. If there is sufficient rationale the Department can recommend that the EQC approve the plan even though some conditions are not completely resolved. Be advised, however, that the Department believes the deficiencies discussed above are basic requirements that are necessary in any planning document.

A detailed review of the plan, with respect to each of the 25 conditions, is enclosed. If you have questions about the review please feel free to call Don Yon, Tualatin Basin Coordinator (229-5371). He or members of the Nonpoint Source Program will be available to work with your staff to clarify the details of the review as needed.

Again, we do appreciate the effort that has already gone into the plan. With just a few more important adjustments we believe the plan will be approvable.

Sincerely,



Lydia R. Taylor
Administrator
Water Quality Division

LT:DMW:crw
SW\WC7532
Enclosure

12/10/90

OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

STAFF REVIEW

TUALATIN RIVER BASIN
WATERSHED MANAGEMENT PLAN

Designated Management Agency: OREGON DEPARTMENT OF AGRICULTURE

On August 10, 1990 the Environmental Quality Commission (EQC) reviewed the Tualatin River Watershed Management Plans for control of nonpoint source (NPS) pollution. These planning documents are required by OAR 340-41-470(3) which set total daily maximum loads (TMDLs) for the Tualatin. The plans are intended to demonstrate how the agencies involved will meet the load allocations assigned to NPS categories. Among the documents reviewed was the plan for control of NPS pollution resulting from agricultural operations in Washington County. This plan was prepared and submitted by the Washington County Soil and Water Conservation District and the Oregon Department of Agriculture (ODA). After considering the staff report which reviewed the plan, the EQC accepted the Department's recommendation to defer action. This recommendation was based on a request from ODA that they be allowed to resubmit the plan on November 1, 1990. ODA recognized that substantial revisions to the plan were necessary and expressed a preference that the Department and the EQC wait to evaluate the revised plan rather than take action on the available document. The Department recommendation for deferral included 25 conditions for approval.

The revised plan, titled Tualatin River Watershed Management Plan, A Plan for Controlling Rural Nonpoint Source Pollution, was received by the Department on November 13, 1990. It is evident that a great deal of effort has gone into the revised document. It has been reorganized and expanded in several areas which has resulted in a much improved plan. A table has been added which identifies where in the document DEQ requirements are addressed. This makes the document easier to use. The process for selecting best management practices (BMPs) and best management systems is more fully (and adequately) described. Cooperating agencies and their responsibilities are more fully described. A number of possible funding sources/options are identified. These improvements address many of the concerns the Department expressed in the August 10, 1990 Staff Report. However, there are still deficiencies in critical areas which must be addressed before the Department can recommend approval of the plan by the EQC. These deficiencies are primarily in two areas:

1. Objectives, tasks, and target dates. The plan still lacks clear, measurable objectives and action items that will be implemented by specified target dates. The implementation

schedule does not include interim dates by which specified targets are intended to be accomplished. The intent of this requirement is to provide a clear map of where the plan is headed and what "mileposts" will be passed along the way to achieving the goal of "restoration of the waters of the basin to a level of quality that will protect and preserve their beneficial uses." Without these "mileposts" it will be impossible to track progress during implementation of the plan. Without tracking progress it will not be possible to make mid-course corrections in the event that implementation of specific tasks does not have the desired result.

2. Resources. Although the revised plan includes projected costs and a good discussion of potential funding sources/options, it does not identify which of these options will be pursued and in what time frame. Again, the information required here is necessary to track progress.

The detailed Department Staff Review which follows is organized according to the 25 conditions that were described in the August 10, 1990 Staff Report. The condition is first stated exactly as it was worded in the Staff Report. The current plan revision is then reviewed in the context of the condition.

Condition 1. The Oregon Department of Agriculture, the designated management agency for the agricultural watershed management plan for the Tualatin Basin, shall assume full responsibility for modifying the plan according to the following instructions:

Review: This condition is met in the November 1990 revision.

Condition 2. Describe problems in terms of the agricultural land use practices which cause them (for example: streambank erosion resulting from riparian zone vegetation removal). These descriptions will eventually have to include detail on both location and severity before management measures can be prescribed, funded, and applied.

Review: This condition is met in the November 1990 revision.

The revised plan includes a thorough, well written, discussion of potential NPS water pollution problems associated with agricultural land use practices (Section I, Chapter III). Ultimately, additional details on location and severity of specific problems will be necessary. However, that detailed information is not necessary at this level of planning and may not be available at this time. A schedule identifying when more detailed information will be developed would be useful.

On page 11 it is stated that "Scoggins Creek, Gales Creek, and Dairy Creek have been assigned maximum concentrations of 40, 45 and 45 ug/l respectively." This is NOT CORRECT. The criteria are monthly medians NOT maximum concentrations. The implication that Hagg Lake has high concentrations of phosphorus, "in the order of 58 ug/l," should be supported. If the 58 ug/l value is based on a single grab sample then the comparison of that value to the monthly median criteria for Scoggins Creek is inappropriate.

Condition 3. Collect all program elements together in one complete list. The seven elements listed in the "SWCD Strategy..." section come close to being such a list, but do not include information and education, review and adjustment, fundrasing, interagency agreements and relationships, and other program elements which are developed elsewhere in the plan. Where applicable, explain which of the program elements address which of the identified problems.

Review: This condition is met in the November 1990 revision.

Condition 4. Specify the action items, work tasks, and other true objectives of the plan. The absence of such objectives, or their dispersal in a way that makes them hard to identify, is the principal weakness of the plan and manifests itself throughout. For example: The options identified in the "Information and Education" section should be expanded to indicate tasks, time lines, products, estimated costs, and responsible parties. If the implementation details of a task or objective are uncertain at this time, explain why and describe a process and a time line for development of further detail.

Review: This condition has not been adequately addressed.

The absence of clear objectives, specific tasks and schedules remains the principal weakness of this plan. Until this condition is satisfactorily addressed the plan can not be recommended for approval. The current revision is much improved in terms of identifying and discussing the problem and describing options/practices for improving water quality. However, there is still no clear indication of the direction that implementation will take, and no identified mileposts or statements of anticipated results that can be used to track progress.

The section titled "Objective" on page 20 of the plan describes generalized goals rather than objectives, e.g. achieving a high level of understanding of water quality problems, controlling pollution close to its source, and basing actions on sound conservation planning. As stated in the guidance that was originally provided, objectives, in the context of these watershed management plans, means specific statements of what is to be accomplished. They should include measurable results. The objective statements should describe what will happen, when it is anticipated that it will be completed, what the measurable result will be, and if appropriate, what the budget limitations will be. In the implementation section of the plan there should be specific tasks identified, with target dates for completion, that will lead to the attainment of the objective.

The level of detail in the cost estimates (Table 5, page 39) implies that there are known actions that are expected to be done in known time frames. These actions should be detailed in the implementation section of the plan. The measures identified in Table 6 (page 51) could be developed into objectives. Specific tasks and target dates could then be listed under each. Much of the needed information already exists in the Dairy-McKay Creek Hydrologic Unit proposal, in GWEB proposals, in 319 proposals and other documents. The information must be consolidated into a cohesive plan with tasks identified in chronological order. This will allow the agricultural community and the public to easily see what needs to be accomplished. It will also provide a means of assessing progress during the implementation process. This will allow for mid-course corrections, as necessary, before the final compliance date is reached.

Condition 5. Group objectives according to the control option or program element they serve. For example: The seven items listed in the "SWCD Strategy.." section are sub-goals or major program elements of the plan, and each could serve as a heading under which a number of specific tasks or objectives may be grouped.

Review: This condition has not been adequately addressed.

See the discussion for condition 4 above. The plan can not be recommended for approval if it does not contain specific tasks with identified target completion dates.

Condition 6. Describe how the variety of available BMPs, management measures, and tasks will be selected and applied to address particular site-specific problems. If land owners and managers will make these selections, explain what considerations will guide them. Also explain the considerations used by cost-share funding sources in setting priorities for allocation of available funds in the basin.

Review: This condition is met in the November 1990 revision.

The section on best management practices and best management systems (beginning on page 31) combined with Appendix C and the discussion of control options on page 29 provide adequate information to meet this requirement.

Condition 7. Discuss optional courses of action in the event that voluntary participation is inadequate and enforcement is necessary. Identify the means of enforcement of the required BMPs, the responsible entity(s), the necessary authority, and the staffing and funding sources.

Review: This condition is minimally addressed.

While the plan does discuss some options it does not explore means of enforcement and necessary authority. It does not state whether any of the options would be pursued if enforcement becomes necessary. Additional information on enforcement, authority, and preferred options to be pursued if voluntary efforts are not successful would be very useful.

On page 32 of the plan it is stated that the plan focuses on voluntary implementation of BMPs. For confined animal feeding operations (CAFO) it is correctly stated that DEQ has enforcement authority (however, the plan does not specify rules or means of enforcement). It is stated that Washington County has authority "allowing the county to pass along costs of abating specific sources of agricultural pollution to operators." But the plan does not specify relevant ordinances, does not explain how this approach would work, and does not indicate whether or not the county would actually take action if it became necessary.

The plan describes other state efforts at establishing special water quality districts where restrictions have been placed on activities contributing to the problem. However, the plan does not list specific programs, and

does not state whether or not such a district would be sought or supported by ODA if voluntary efforts fail.

The plan briefly describes "Preservation Acts" in other states which require farmers in preservation areas to develop conservation plans by specified dates. The plan does not give details and does not specify who would be responsible for enforcement.

Condition 8: Explain how the "first approximation" of conservation needs (page 32) was arrived at, and why those particular BMPs were selected to use in the needs estimate.

Review: This condition is met in the November 1990 revision.

Condition 9: Describe more fully the BMP descriptions and other guidance documents and directives available in the SCS Field Office Technical Guide. Include in the plan a few excerpts or examples from the SCS Guide to illustrate the information available on a particular BMP or management system approach.

Review: This condition is met in the November 1990 revision.

Although the plan does not include excerpts from the SCS Guide, the more complete discussions under the Control Strategies section of the current revision adequately meet the intent of this condition.

Condition 10: In the plan's list of BMPs, identify each one also by the SCS code or designations, if applicable.

Review: This condition is met in the November 1990 revision.

The SCS codes are now included in Appendix C.

Condition 11: Identify the agency (or agencies) responsible for implementation of the program, and describe specific roles and responsibilities.

Review: This condition is met in the November 1990 revision.

The section on agency responsibilities beginning on page 35 is generally well written and meets the intent of the condition. One clarification is needed, however. The last sentence on page 36 says that DEQ is responsible for allocating funds to the project. This is not accurate. DEQ will make every reasonable effort to assist in securing resources for implementing practices to improve water quality in the Tualatin. But the

responsibility for overall coordination and implementation of the Tualatin River Watershed Management Plan, including securing funds, lies with the Designated Management Agency.

Condition 12: Describe the "master plan" and "annual action plan" mentioned in the plan in terms of: (a) purpose and use, (b) content, and (c) process for development and review.

Review: This condition is met in the November 1990 revision.

In the plan review section, the reference to amending the master plan and redirecting the annual action plan has been deleted.

Condition 13: Using a more fully developed set of program objectives and tasks, expand the implementation schedule to show interim targets or "mileposts."

Review: This condition has not been adequately addressed.

The project schedule contained in Table 6 on page 51 is an improvement over the "schedule of key dates & events" provided in the original draft. The table does identify some "measures to be taken," identifies the lead agency, and specifies work periods during which measures will be taken. However, the absence of clearly defined objectives and specific tasks (as discussed under Conditions 4 & 5) does not allow for the development of an expanded schedule that includes interim targets. The absence of these targets, or "mileposts," precludes evaluation of progress prior to the June 1993 compliance date. An expanded schedule which contains sufficient detail to allow for assessment of progress at interim dates during implementation of the plan must be supplied before the Department can recommend plan approval.

Condition 14: Describe public involvement in plan review and adjustment.

Review: This condition is minimally, but adequately, addressed.

A schedule of when the "periodic reviews of the plan and results of actions taken..." will occur would be helpful. There should be some form of report which documents the outcome of the reviews.

Condition 15: Describe the program objectives or other assumptions underlying the detailed program administration budget. It is understood that the three funding scenario's identified in the plan

imply different levels of effort and achievement. This should be described in terms of the specific objectives and tasks which can be accomplished at each funding level.

Review: This condition is met in the November 1990 revision.

The project cost discussion has been completely revised and recalculated and the three funding scenario's have been deleted. The condition is not relevant to the current revision.

Condition 16: Expand the discussion of potential funding sources to address: (a) the particular characteristics, program preferences, or funding criteria of each, (b) amounts of funds potentially available, (c) conditions typically placed on the funds, and (d) tasks for further investigation or applying to these sources of funds.

Review: This condition has not been completely met.

The potential funding sources section (page 43) has been greatly expanded and fully discusses a number of funding sources/options, identifies amount potentially available where appropriate, and outlines conditions. However, no tasks for further investigation or applying for funds are identified. In order for the plan to be successful, funding must be pursued. In order to secure funding, decisions must be made as to which sources/options are to be pursued. Necessary actions and time lines must be identified that will result in resources being available when they are needed.

Condition 17: If adequate funding sources are not available for the types of funding assistance programs outlined, explain what steps will be taken to require individual agricultural operators to implement the required BMPs to ensure compliance with TMDL goals.

Review: This condition has not been met.

The plan should make an assessment of the likelihood of securing adequate funds through the assistance programs identified. An inability to secure grants and/or cost share money will not relieve the requirement to meet the load allocations by June of 1993. Unless it can be demonstrated that assistance programs will provide adequate funding, the plan must identify which of the other alternatives listed will be pursued.

Condition 18: Describe a process for regular periodic reporting of program implementation results.

Review: This condition is met in the November 1990 revision.

Condition 19: Discuss interagency agreements necessary for program implementation. Reiterate in one location the opportunities for interagency cooperation mentioned throughout the plan.

Review: This condition is met in the November 1990 revision.

Condition 20: Complete the container nursery water quality protection program now under development, and incorporate into the plan.

Review: This condition is met in the November 1990 revision.

Container nurseries are discussed on pages 14 and 23. The Container Nursery Irrigation Water Management Plan will become a part of the Watershed Management Plan (as Appendix B) when it is completed.

Condition 21: A monthly progress report to DEQ (utilizing a one- or two-page form) and a monthly progress meeting with DEQ shall be included in the plan.

Review: This condition is met in the November 1990 revision.

Condition 22: Include provisions for the protection of all streams, wetlands, and ponds with adequate (preferably 100 feet) undisturbed buffers, as measured from the normal high water flow, on all sides.

Review: This condition has not been met.

Near the bottom of page 26 it is stated that buffers may be used along stream banks in some instances. It is further stated that design of buffers and appropriate buffer width is site specific. No guidance is given, or referred to, with respect to buffer design, preferred buffer widths, or protection of wetlands.

Condition 23: All of the above must be included in a Final Plan and provided to DEQ by November 1, 1990.

Review: This condition was not met.

Since the plan received on November 13, 1990 does not include all of the referenced items, the condition was not met.

Condition 24: Within 30 days after submission of the Final Plan, DEQ will review the Plan and either certify its compliance with the rules or prepare other comments as necessary. Failure of the Plan to meet these conditions will result in action to enforce the provisions of OAR 340-41-470 and/or the interagency agreements resulting therefrom.

Review: This review document fulfills the requirement for DEQ to review and comment on the plan within 30 days of submission. The review has determined that the plan is incomplete because it does not meet the conditions listed above. Therefore the plan will most likely not meet the TMDL requirements by the June 30, 1993 compliance date. The ODA should further modify the plan to meet the remaining conditions by March 1, 1991. Failure to submit a complete plan which meets the remaining conditions will result in a staff recommendation for plan rejection and the issuance of a Commission Order at the June 1991 EQC Meeting. Failure to comply with the Commission Order may result in a formal enforcement action and possibly a civil penalty assessment.

Condition 25: Identify the appropriate responsible agency to join with DEQ in a process to refine and establish a complete TMDL compliance monitoring program for applicable portions of the Tualatin Basin (process to commence within 120 days).

Review: The condition is met.

ODA has joined DEQ in the process to complete this task.

NOTICE

THE FULL TEXT OF THE AGRICULTURE PLAN IS NOT INCLUDED, BUT IS AVAILABLE UPON REQUEST.

FINAL REVISED
NONPOINT SOURCE WATER QUALITY MANAGEMENT PLAN
FOR THE TUALATIN RIVER BASIN

This attachment to Agenda Item 13 reports on public comments received on the Tualatin Plan and presents the final revised Tualatin Plan for Board of Forestry approval.

The Department received three letters commenting on the revised Tualatin Plan. These came from the Associated Oregon Loggers, Stimson Lumber Company, and the Oregon Forest Industries Council. Comments ranged from general statements supporting the processes established in the plan to specific wording recommendations. These recommendations were accommodated when they provided additional clarity to the plan and to the extent they were consistent with meeting the Environmental Quality Commission's (EQC) conditions for plan approval. These changes were discussed with the Department of Environmental Quality (DEQ) and refined slightly by mutual agreement. The wording changes are shown in bold type on pages 1, 1, and 19 of the plan. The Department believes the remaining recommendations made in public comments are adequately addressed in the plan and by the EQC approval process.

The DEQ did not request additional changes in wording of the April 19 draft of the revised plan. However, DEQ asked that the Enhanced Monitoring Project Plan be attached. This was done, and the Enhanced Monitoring Project Plan is now Attachment G to the Tualatin Plan. DEQ will recommend that the EQC approve the current version of the plan at the June 14, 1991 EQC meeting.

The Department of Forestry recommends that the Board of Forestry take the following action at its June 5, 1991 meeting:

**Approve the May 17, 1991 draft revised
Tualatin Plan.**

DRAFT REVISED

Oregon Department of Forestry

NONPOINT SOURCE WATER QUALITY MANAGEMENT PROGRAM PLAN

for the

TUALATIN RIVER BASIN

JAMES E. BROWN
State Forester

May 17, 1991

Prepared By
David A. Degenhardt
Forest Practices Section
2600 State Street
Salem, Oregon 97310

AGENDA ITEM 13
Attachment 1
Page 2 of 50

Oregon Department of Forestry
NONPOINT SOURCE WATER QUALITY MANAGEMENT PROGRAM PLAN
for the
TUALATIN RIVER BASIN

EXECUTIVE SUMMARY

This plan describes how the Department of Forestry will comply with phosphorus limits in the Tualatin River. The Environmental Quality Commission adopted an administrative rule which set phosphorus limits for this river. The Department of Forestry administers the Forest Practices Program which emphasizes maintaining water quality. The Department of Forestry will base its phosphorus control plan for forest management in the Tualatin River Basin on the water quality element of the Forest Practices Program.

The purpose of limiting phosphorus loading in the Tualatin River is to control excessive algal growth. Excessive algae raises pH and affects odor and appearance of the water in violation of water quality standards. The commission's rule assigns a share of the total maximum daily load for phosphorus to nonpoint sources including forest management, agricultural, and urban. Each nonpoint source's share of the TMDL is its "load allocation."

Forested lands may contribute to natural background phosphorus in the river through leaf fall and other organic material, groundwater leaching, and soil eroded into streams. Forest practices that may contribute to phosphorus loadings in streams include harvesting, road-building, and slash-burning. Forestry's man-caused phosphorus loading and the natural background loading are not distinguishable because data are not yet available to separate the two. The Department of Environmental Quality estimates a small proportion of the Tualatin's total phosphorus loading comes from forest land. The Departments of Environmental Quality and Forestry will assemble and consult a nonpoint source technical advisory panel to review and refine forestry's interim load allocations as more data are accumulated from monitoring in the basin.

Initially, the Department of Forestry will conduct a low intensity monitoring program in the Tualatin Basin. This monitoring will focus on total phosphorus levels from all sources on forest lands. Monitoring will be augmented by a comprehensive research literature review of the relationship between phosphorus and forestry. If low intensity monitoring and the literature study indicate a practically controllable, forestry-caused phosphorus component, the Department of Forestry will investigate more intensively. If these in-depth investigations support a conclusion that **forest practices or forest operations cause** forest streams to exceed appropriate load allocations, the Board and Department of Forestry will make

appropriate program adjustments.

The plan describes the segments of the Forest Practices Program that combine to form its water quality element. The plan includes the authority, goal, objectives, program operations, public involvement, and budget of the Forest Practices Program. The PROGRAM OPERATIONS segment includes program administration, program review and reporting, and program adjustment. The Forest Practices Program has been dynamic since authorized by the 1971 Forest Practices Act. The Board and Department of Forestry plan to use this program to continue to adequately control phosphorus loadings from forest management activities.

TABLE OF CONTENTS

EXECUTIVE SUMMARY.....i

TABLE OF CONTENTS.....iii

INTRODUCTION..... 1

SITUATION..... 1

 Water Quality Problems in the Tualatin River..... 1

 Forest Management in the Tualatin River Basin..... 2

 Forest Management and Phosphorus Loadings..... 3

 Forest Management's Load Allocation..... 5

 Resolving Technical Difficulties..... 6

 Forestry's Existing Program..... 6

 Selecting a Water Quality Program.....6

 Ongoing Implementation.....8

AUTHORITY..... 9

GOAL..... 9

OBJECTIVES.....11

PROGRAM OPERATION.....12

 Program Administration.....12

 Forest Practices Rules as Best Management Practices.....12

 Program Organization.....13

 Operation Planning.....14

 Notification of Operation.....14

 Operation Evaluation and Priority-Setting...14

 Pre-Operation Inspections.....15

 Written Plans.....16

 Preventive Inspections.....16

 In-Progress and Post-Operation Inspections....16

 Operator Education and Recommendations.....16

 Written Statement of Unsatisfactory Condition.....17

 Enforcement.....17

 Citation.....17

 Order to Repair Damage or Correct Unsatisfactory Condition.....17

 Civil Penalty.....17

 Criminal Prosecution.....18

Program Monitoring.....18
 Program Implementation Monitoring.....18
 Program Compliance Monitoring.....19
 Program Effectiveness Monitoring.....19

Program Review and Reporting.....19
 NPS Statewide Water Quality Management
 Plan Review.....19
 State Forester's Annual Review.....20
 Biennial Activity Summary.....20
 Forest Practices Monitoring Program.....20

Program Adjustment.....21
 Issue Identification.....21
 Issue Evaluation.....21
 Program Adjustment Actions.....21

PUBLIC INVOLVEMENT.....21

PROGRAM BUDGET.....22
 Established Funding of On-Going Program.....22
 Sources of Plan's Needed Additional Funding.....23

CONCLUSION.....23

REFERENCES.....25

APPENDIX A - THE OREGON FOREST PRACTICES ACT.....27

APPENDIX B - OREGON FOREST PRACTICE RULES.....28

APPENDIX C - FORESTRY'S NPS CONTROL PLAN DECISION TREE.....29

APPENDIX D - TUALATIN RIVER BASIN MONITORING PLAN.....30

APPENDIX E - TUALATIN RIVER BASIN CONTROL PLAN ELEMENTS.....35

APPENDIX F - PROJECT PLAN, NUTRIENT CONTROL STRATEGY STUDY...36

APPENDIX G - ENHANCED MONITORING PROJECT PLAN, TUALATIN RIVER BASIN, MAY 1 TO OCTOBER 30, 1991 AND 1992.....38

Oregon Department of Forestry

NONPOINT SOURCE WATER QUALITY MANAGEMENT PROGRAM PLAN
for the
TUALATIN RIVER BASIN

INTRODUCTION

This plan meets the requirements placed upon the Department of Forestry by the Environmental Quality Commission's (EQC) administrative rule, OAR 340-41-470. The rule establishes limitations on total phosphorus loadings in the Tualatin River between May 1 and October 31 of each year. The Department of Forestry (ODF) submits this program plan as required to describe how forest management activities comply with appropriate phosphorus limits.

ODF has a functioning nonpoint source water quality management program. That program is the Forest Practices Program composed of the Forest Practices Act (Appendix A) and implementing rules (Appendix B). The Forest Practices Program is the basis of ODF's plan for water quality management to comply with the EQC's rule.

This plan's Situation section describes the Tualatin River basin water quality problem and its relationship to forest management activities. It includes a joint plan between the Departments of Forestry and Environmental Quality (DEQ) to resolve technical difficulties with implementing and monitoring load allocations in the basin.

The remaining sections of the plan describe the Forest Practices Program's water quality element. This program element is the core of the plan. The Forest Practices Program is a statewide program reaching beyond the Tualatin basin. It addresses all waters in the state, including water quality limited streams such as the Tualatin River. The remaining plan sections describe the authority, goal, objectives, program operation, public involvement, and budget of the Forest Practices Program.

SITUATION

Water Quality Problems in the Tualatin River

The lower reaches of the Tualatin River fail to meet Oregon's water quality standards for pH and dissolved oxygen. The elevated pH and depressed dissolved oxygen impair beneficial uses. Those beneficial uses are water contact recreation, fisheries, other aquatic life, and aesthetic appearance.

Due to the pH and dissolved oxygen problems, DEQ has designated the Tualatin River a "water quality limited" stream. As a result of this designation, the federal Clean Water Act, PL 92-500, requires DEQ to set total maximum daily loads (TMDLs) for the offending pollutants in the Tualatin River. All contributing point and nonpoint sources of these pollutants are assigned a share of the TMDL. The conditions in the lower reaches are beyond the carrying capacity of the river. All sources must reduce or maintain their loadings within their share to contribute to correcting this situation. Forestry's share, like that of each nonpoint source, is called a "load allocation."

The Tualatin River's dissolved oxygen condition is primarily due to excessive ammonia-nitrogen loadings from point sources. Because forest lands are not such a source, this plan does not address this ammonia-nitrogen problem.

This plan does address the pH problem. Excessive algal growth is the cause of the pH and aesthetics problems. Growing and decaying algae raises the water's pH and lowers dissolved oxygen to levels unsuitable for fish and other aquatic life. Growing algae clouds and colors the water, while decaying algae creates unpleasant odors. Both affect aesthetics as measured by the concentration of chlorophyll in the water.

DEQ proposes to correct these problems by limiting the nutrients algae needs to grow. Phosphorus is a key nutrient that can be controlled. Therefore, DEQ set a TMDL for the net accumulation of all sources of phosphorus in the basin. That TMDL is 0.07 milligrams per liter (mg/l) in the lower reaches of the river. Controlling phosphorus loadings from forest management activities is the focus of this program plan.

DEQ has set this TMDL in administrative rule OAR 340-41-470. This rule requires ODF to submit a program plan for complying with its load allocations. The forestry plan must show how ODF will control phosphorus loadings from forest management activities. Refining forestry's load allocations, jointly with DEQ, to allow for natural background and forest management effects is a part of ODF's program plan.

Forest Management in the Tualatin River Basin

The Tualatin River basin includes some 225,000 acres of forest land, 49 percent of its total area. The upper basin is primarily in large industrial forest ownerships and state forests. However, much of the upper watershed is also subject to the effects of non-forest uses. In the mid- to upper-basin is a large area of mixed forest, agricultural, and rural residential land uses. A wide range of ownership sizes occur in this area of mixed land use.

The basin's forests are almost entirely second-growth stands. Many stands are in the mid-rotation age classes. A rotation may range from 60 to 80 years, or it may be as long as the landowner decides. Landowners make harvesting decisions according to their individual management goals. Therefore, future harvesting levels are not entirely predictable. Since 1980, harvest levels have ranged from 4,200 to 8,600 acres per year. As stands in the basin reach marketable age, harvesting may be expected to increase in the basin. The road network providing access to basin forests is largely in place.

Forest Management and Phosphorus Loadings

Research literature shows that forests produce phosphorus loadings both naturally and through man's activities. Known sources include organics such as woody debris and leaves leached in streams, groundwater percolating through geologic formations, and soil carried into streams, sometimes associated with slash burning.

Annual leaf fall and other organic material, groundwater, and soil erosion are natural background sources of phosphorus in streams. This plan cannot control these natural processes. However, these natural background processes will have to be isolated and measured by detailed research, should it become necessary to separate natural from man-caused sources of phosphorus.

Forest harvesting, road-building, and slash-burning may contribute to phosphorus loadings in streams. Man-caused water quality conditions can be difficult to detect because of the extremely variable natural conditions in forest streams and watersheds. This situation is caused by varying soil types, geology, vegetation, and precipitation patterns. Control of water quality is further complicated by the complexity of processes in ecological systems. This complexity involves both sources and sinks for such water quality parameters as phosphorus. In addition to sources (pollutant inputs), the sinks' assimilative capacity of forested stream segments) must be considered in evaluating water quality conditions. There is actually a net effect on phosphorus in forest streams that changes as the water moves downstream. This net effect may be beneficial or detrimental, depending upon the water body's assimilative capacity at successive points along its length. The combination of natural variability and complexity in forest streams creates a need for sufficient data to resolve technical difficulties with forestry's load allocation and monitoring scheme.

The complexity of natural systems makes it difficult to predict phosphorus concentrations and, in turn, effects on beneficial uses. As a result, steady state laboratory experiments estimating effects on beneficial uses may not be borne out under the more complex in-stream conditions. For example, much of the phosphorus entering forest streams due to forest management may be adsorbed on suspended organic and soil particles or trapped in sediments,

unavailable immediately to nuisance algae growth. Furthermore, review of current literature seems to indicate that most processes by which phosphorus enters streams operate during the rains of the winter high-flow season. During the high-flow season, phosphorus may be rapidly flushed through the river system, too diluted to affect beneficial uses in the Tualatin River. More information is needed to determine whether phosphorus associated with sediments re-enters the system, available to nuisance algae growth.

The behavior of phosphorus in complex forest hydrologic systems is not completely known. The soil disturbance and slash burning that may accompany forest management do not always increase phosphorus loadings. The way these activities are conducted and the soil type and underlying geomorphology of the drainage are evidently major determining factors. In one Alsea River subbasin study, neither increased sediment production nor broadcast burning raised phosphorus loadings in streams (Brown, et al., 1973). In a northeast Oregon study, clearcuts where slash piles were burned produced additional phosphorus in a stream while clearcutting alone did not (Tiedemann et al., 1988). In results from the H. J. Andrews Experimental Forest, ten years of data showed no difference between the phosphorus loadings from harvested and unharvested forest watersheds (Martin and Harr, 1989). Apparently, local geology, soils, forest type, and forest management methods must be well known, and their interactions tested, before sources of phosphorus can be determined reliably.

Additional investigation is planned to determine how much of the current and future Tualatin River phosphorus loading from forest lands is caused by forest management. Phosphorus can enter streams through groundwater percolation or surface processes. Phosphorus-bearing soil and organic materials, disturbed by forest management, would have to be carried into the stream system by direct slope movement or through runoff watercourses. Northwest Oregon forest soils are like a sponge. They can absorb more water than even the area's high rainfall supplies. Overland flow is most likely limited to the compacted areas of roads and skid trails. The TMDL compliance period of May 1 to October 31 is generally the annual period of minor rainfall and low streamflow. In addition, forest practices BMPs required by the Forest Practice rules contain overland flow, preventing erosion of soil into waters. The required practices also prohibit direct contact of forest management activities with stream waters. Consequently, both the sources and the carrier for potential man-caused phosphorus loadings are limited.

At this time, both DEQ and ODF believe forest lands contribute a relatively small proportion of the Tualatin River's total phosphorus loading. In addition, there is currently no evidence that beneficial uses are impaired by phosphorus loadings in the forested stream segments of the Tualatin basin.

ODF will begin assessing the relationship of in-stream phosphorus to forest land and management activities in the Tualatin River basin by conducting a comprehensive research literature review and analysis. This will begin to supply the information necessary to better analyze the local effectiveness of forestry best management practices in limiting phosphorus loadings.

Forest Management's Load Allocation

Because of time limitations, DEQ had to set interim load allocations with limited data. DEQ and ODF agree that the interim load allocations will be REVIEWED, AND IF NECESSARY, REVISED. Refinement will be an iterative process. Designated management agencies (DMAs) and DEQ will obtain more monitoring data, and then adjust the load allocations to allow for what is learned about natural and man-caused phosphorus levels.

DEQ set forestry's interim load allocations using some monitoring data and some estimation. The current phosphorus loading from all land uses was estimated from water sampling in an area of mixed land use in the upper basin. Phosphorus loadings of each separate land use could not be determined. Rather, forestry's load allocation was then computed using a mathematical formula that attempted to predict loadings by modeling the basin's hydrologic system. The formula is made up of numerical factors assembled to represent each upstream land use's phosphorus contribution. DEQ set forestry's interim load allocation equal to the estimated current phosphorus loading from forest land in the upper Tualatin River basin.

Neither current monitoring data nor the mathematical model can separate natural background phosphorus loadings from man-caused loadings. Consequently, forest management's phosphorus loading, separate from natural background loadings, is not now known. However, the current sum of net phosphorus effects from forest land are estimated to be a relatively small proportion of the Tualatin River's total loading compared to downstream sources.

Forestry continues to control phosphorus-loading activities through mandatory BMPs enforced since 1972. However, some potential temporary disturbance is necessary in growing and harvesting trees. Forest management activity will increase as the young stands in the basin mature and are harvested and replanted. ODF is recommending to DEQ that forestry's load allocations need to allow for the potential increase in the phosphorus loading that may result.

ODF's effectiveness monitoring program will seek to clarify this load allocation component along with the natural background component. What ODF learns will be shared with DEQ as the two agencies conduct iterative refinements of the load allocations.

Resolving Technical Difficulties

ODF and forest scientists have identified technical difficulties with implementing load allocations and monitoring conditions in forest streams. These technical difficulties are apparent in the preceding discussions. In summary, they are as follows.

1. Because of the complexity and variability of forest hydrologic systems, it is difficult to:
 - a. model and predict phosphorus loadings;
 - b. set load allocations matching actual conditions;
 - c. separate man-caused from natural loadings; and
 - d. cost-effectively provide reliable measurements of compliance with discrete numerical load allocations.
2. Determining equitable load allocations needed to provide for increased future forest management activity will be difficult due to the lack of data and understanding of complex relationships.

ODF discussed these concerns with DEQ. The agencies agreed to jointly assemble a panel of technical specialists specifically knowledgeable in forest hydrologic systems and NPS pollution control. This NPS technical specialists panel (TSP) will be consulted in reviewing the modeling, load allocations, and monitoring in the Tualatin Basin. With the support of the TSP, ODF and DEQ will work together to resolve the technical difficulties of managing water quality in the forested streams of the Tualatin River basin.

Forestry's Existing Program

* Selecting a Water Quality Management Program

OAR 340-41-470 requires ODF to develop and implement a water quality management program and plan for forestry specific to the Tualatin River basin. The Board of Forestry and ODF provide an existing program to deal with water quality effects from forest management, as directed by the 1971 Forest Practices Act in ORS 527.610(3). This is the Forest Practices Program. Water quality maintenance has been a major responsibility of the program since its creation. All alternatives for planning to meet OAR 340-41-470's requirement are subject to the Board of Forestry's statutory mandate to regulate forest practices to manage water quality. The Forest Practices Program is an existing mechanism for phosphorus control in the Tualatin Basin that has been functioning there for nearly two decades.

The program was created with the passage of the 1971 Forest Practices Act, shown in Appendix A. Subsequent amendments, most recently in 1987, by House Bill 3396, have kept the Forest

Practices Act up-to-date. The Act addresses multiple forest resources. It manages practices affecting forest productivity, as well as water quality. Of the program's several elements, this plan's focus is water quality element. This water quality element's functioning is fully described in the Program Operation section.

The Forest Practices Act is implemented through the Forest Practice rules. In 1979, the Forest Practice rules were certified as best management practices for Oregon's Section 208 water quality program. A 1987 amendment to the Forest Practices Act modified ORS 527.630 to give the Board of Forestry exclusive authority for developing and enforcing rules to protect forest resources, including water. Therefore, by statute, this established and funded program must continue to be the means of controlling forest management's effects on water quality in the Tualatin River basin.

The Forest Practices Program is a statewide program, but it is also designed to recognize differences in regional conditions. The Board and Department of Forestry will consider more localized options for the Tualatin River basin if deemed appropriate. These options might entail: 1) additional field implementation personnel; or 2) an augmented set of "subregional" rules or other program changes.

These options will be considered if comprehensive investigations of research literature on forestry-related phosphorus sources and intensive monitoring of the Tualatin basin, if needed, indicate they are required. These investigations are necessary for three reasons. First, past monitoring cannot distinguish between forestry-related phosphorus and natural background phosphorus. There may be significant natural background sources of phosphorus on forest land. Second, some research indicates no difference in phosphorus loadings between managed and unmanaged forest watersheds. Third, the existing forestry BMPs being implemented in the Tualatin basin may provide adequate control of phosphorus loading.

Tualatin River basin forest land outside urban growth boundaries is under the authority of the Forest Practices Program. The private and state-owned forest lands all come under direct control of the Program rules. There is only a small amount of federally-owned Bureau of Land Management (BLM) forest land in the basin. By Memorandum of Agreement, BLM forest land water resources are managed under practices equal to or more protective than Forest Practices Program BMPs.

Some activities on forest land are not related to commercial forest operations and will have to be regulated by local government. Examples are residential use, agricultural use, recreation, and maintenance of publicly-owned roads. The Department of Forestry

will advise local agencies dealing with water quality effects of such activities.

While these difficulties are being resolved, the Forest Practices Program described in the sections that follow will continue to manage water quality affected by forest operations.

* Ongoing Implementation

A program staff of administrative and technical specialists supports field Forest Practices Foresters who implement the Forest Practice rules on-site. One Forest Practices Forester, stationed in Forest Grove, inspects the majority of forest operations in the Tualatin River basin. Three additional Forest Practices Foresters' inspections areas include the fringes of the basin. These foresters are stationed in Forest Grove, Columbia City, and Mollala.

For the ten years 1980 to 1989, 3,483 forest operations involving harvesting, road construction, and site preparation have been conducted in the Tualatin River basin. These operations accomplished 65,000 acres of harvesting and 188 miles of road construction. Table 1 below shows the number of forest practices inspections of these operations by ODF foresters each year from 1980 to 1989.

Not all operations need to be inspected, while some receive multiple inspections. Priority is given to the types of operations and the operation sites with potential for affecting resources, primarily water quality. Table 1 also shows that almost all operations were in compliance with Forest Practice rules when inspected.

INSPECTIONS	'80	'81	'82	'83	'84	'85	'86	'87	'88	'89
CONDUCTED	306	496	419	529	540	502	405	433	539	539
COMPLIANCE FOUND	298	489	417	527	534	500	403	423	537	534
WRITTEN RECOMMENDATIONS	105	139	82	88	107	80	85	82	73	73

TABLE 1: Forest Practices Implementation Activities, 1980-89.

Foresters issue written recommendations, also shown in Table 1, when they want to augment conversations with operators. Prevention is a key strategy of the Forest Practices Program. However, enforcement is used when necessary. When an unsatisfactory

condition cannot be corrected before resources are damaged, the forester issues a citation. Citations include damage repair orders, civil penalties, and possibly criminal charges. These aspects of the program are described completely in the OPERATION section.

AUTHORITY

The Oregon Forest Practices Act, ORS 527.610 to 527.730 and 527.990, (Appendix A) is the statutory authority for the Forest Practices Program. The Forest Practices Act was legislated in 1971. The Act has been changed several times since. It was most recently and extensively updated in 1987.

In ORS 527.630, the Act vests in the Board of Forestry "... exclusive authority to develop and enforce state-wide and regional rules..." to carry out the policy and purposes of the Act. Further, in ORS 527.710, the Act describes the Board's duties:

"In carrying out the purposes ... the board shall adopt, ... rules to be administered by the State Forester establishing minimum standards for forest practices in each region or subregion."

The Forest Practices Act's purposes, in 527.710, include providing for "...the overall maintenance of ...: Water resources, including but not limited to sources of domestic drinking water ..." The statute also assigns the Board to maintain and protect the water-related resources: a) fish and b) significant wetlands.

ODF and DEQ join in a Memorandum of Agreement for implementing water quality management. DEQ is the lead agency for water quality in Oregon. The agencies agree that ODF is the implementing agency for nonpoint source water pollution control on state and private forest lands. As a result, the Department of Forestry is a "designated management agency" (DMA).

GOAL

The water quality goal of the Forest Practices Program is to see that forest resources are managed to meet federal and state water quality requirements.

The program's water quality goal is set in the context of ORS 527.630, the policy section of the Forest Practices Act:

"Forests make a vital contribution to Oregon by providing jobs, products, tax base and other social and economic benefits, by helping to maintain forest tree species, soil, air and water resources and by providing a habitat for wildlife and aquatic

life. Therefore, it is declared to be the public policy of the State of Oregon to encourage economically efficient forest practices that assure the continuous growing and harvesting of forest tree species and the maintenance of forest land for such purposes as the leading use on privately owned land, consistent with sound management of soil, air, water and fish and wildlife resources that assures the continuous benefits of those resources for future generations of Oregonians."

With this charter, the Board is further authorized by ORS 527.630(3) to develop rules and:

"... to coordinate with other state agencies and local governments which are concerned with the forest environment."

The Forest Practice Rules carry out the Forest Practices Act. ORS 527.710(2) describes water resource maintenance among the goals of these rules as follows:

"The rules shall assure the continuous growing and harvesting of forest tree species. Consistent with ORS 527.630, the rules shall provide for the overall maintenance of the following resources:

- (a) Air quality;
- (b) Water resources, including but not limited to sources of domestic drinking water;
- (c) Soil productivity; and
- (d) Fish and wildlife."

It is important to understand the meaning of this goal statement in the law. That meaning is clear in the legislative intent statement accompanying House Bill 3396, the 1987 change of the Forest Practices Act. It reads:

"The intent of this subsection is for the board's rules to generally maintain the listed widespread resources, as opposed to maintaining them without any change or disturbance. This recognizes that forest operations may adversely affect these resources but that the integrity of the resources overall should be maintained. It is also intended to continue the long-standing policy that forest landowners are not required to provide "drinkable" domestic water, but rather to provide "treatable" water consistent with the federal and state water quality laws."

Forest operations may be expected to temporarily disturb water quality conditions. However, the Board will establish and enforce practices which will limit that disturbance. This concept is one of protecting all the forest resources from excessive disturbance. This protection does not mean total preservation of individual resources from disturbance at the expense of other resources.

A key element of the Board's responsibility is determining the acceptable limits of disturbance. This requires gathering technical information about the relationships of the forest resources. Technical understanding is followed by decisions on trade-offs among the resources. These decisions are reflected in the design of the Forest Practice Rules.

This must be done in consultation with other agencies and their related programs. For water quality, DEQ is the primary coordinating agency. ORS 527.710 (4) states this responsibility:

"Before adopting rules under subsection (1) of this section, the board shall consult with other agencies of the state or any of its political subdivisions that have functions with respect to the purposes specified in ORS 527.630 or programs affected by forest operations."

ORS 527.710(5) guides the Board in completing this responsibility to consult with other agencies:

"In carrying out the provisions of subsection (4) of this section, the board shall consider and accommodate the rules and programs of other agencies to the extent deemed by the board to be appropriate and consistent with the purposes of ORS 527.630."

The result is management of all forest resources, including the water resource, in a considered, combined harmony.

OBJECTIVES

The water quality objectives of the plan are to continue managing and monitoring water quality and forest growth and harvest through the Forest Practices Program. This program's rules are designed to be best management practices. The rules are administered, interpreted, and modified as necessary to maintain beneficial uses of water during forest operations.

Effectiveness of the rules in maintaining water quality will be assessed through an in-stream water monitoring program. The rules' requirements will be monitored for compliance with water quality standards and total maximum daily loads. Water quality standards and total maximum daily loads are expected to reflect the needs of beneficial uses.

PROGRAM OPERATION

Forest Practices Program operation can be described in three parts. The first is program administration. It includes all the tasks, procedures, and policies necessary to administer the Forest Practice Rules. The second part is program review and reporting. It involves internal, interagency and public review and reporting on the Program. The third part is program adjustment. Adjustments may be educational programs, changes to rule interpretation, or administrative actions by ODF. Adjustments may also be rule changes made by the Board of Forestry.

Program Administration

Forest Practice Rules as Best Management Practices

The Forest Practice Rules (Appendix B) include specific practices and required results that maintain the forest soil, water, air, fish and wildlife during commercial forest operations. In 1979, the rules were certified by the Environmental Protection Agency as best management practices (BMPs).

The rules receive periodic interagency review of their effectiveness in meeting water quality standards. Based on these reviews, the rules are recertified as best management practices by DEQ. The rules address the following activities on forest land:

- * Chemical application, including pesticides and fertilizers;
- * Handling of petroleum products;
- * Disposing of slashing;
- * Stream channel changes;
- * Surface mining for road surfacing rock;
- * Reforestation;
- * Road location;
- * Road design;
- * Road construction;
- * Road maintenance;
- * Harvesting methods;
- * Location of landings, skid trails, and fire trails;
- * Drainage systems for landings, skid trails, and fire trails;
- * Disposition of excess soil and woody debris;
- * Riparian area management;
- * Harvesting around streams;
- * Operating around bogs, swamps, and other wetlands;
- * Disposition of debris from land clearing;
- * Construction of landing fills; and
- * Harvesting on sites with high risk of mass soil movement.

Most of the activities associated with growing and harvesting trees may affect water quality. In summarized form, the rules specify the following practices to protect water quality:

- * Keeping chemicals out of waters;
- * Keeping soil in stable locations, and out of streams;
- * Retaining near-natural water drainage paths around roads, landings, skid trails, and fire trails to maintain slope stability;
- * Retaining ground cover to filter overland water flows;
- * Protecting vegetation around stream channels;
- * Protecting stream banks and beds from disturbance;
- * Limiting soil disturbance;
- * Stabilizing exposed soil surfaces by seeding, mulching, or riprapping;
- * Falling trees away from streams;
- * Maintaining a stable road surface;
- * Keeping activities above high water marks of streams; and
- * Keeping organic debris out of road and landing fills.

Interpretation and enforcement of the Forest Practice rules are supported by program directives and rule guidance. Program directives and rule guidance are included in ODF's Forest Practices Foresters' Handbook. The directives establish policies, standards, and procedures for aspects of program administration such as enforcement. Rule guidance provides discussions of rule intent, what constitutes an unsatisfactory condition, and enforcement guidance for each rule as appropriate. These documents can be examined at ODF offices. Forest Practices Program managers and foresters use the directives and rule guidance to achieve consistent implementation of the program.

Program Organization

The Department of Forestry's organization administers seven programs. One of those seven is the Forest Practices Program. Across the state, the Department has three administrative areas, the Northwest, Southern, and Eastern Oregon Areas. These areas are divided into thirteen districts. The districts maintain twenty-eight unit and satellite offices where Forest Practices Foresters (FPFs) are stationed. Supervision of the field foresters is provided by the area, district, and unit offices. The Northwest and Southern Oregon Area offices also provide geotechnical specialists to support the field foresters.

Forty-seven Forest Practices Foresters monitor commercial forest operations on all non-federal forest lands outside municipal urban growth boundaries. Each Forest Practices Forester is responsible for operations in an assigned inspection area.

Staff support of the program is supplied by the Program Director and the three units of the Forest Practices staff at ODF headquarters in Salem. The three units are the Administrative, Operations, and Resource Inventory Units. The Administrative Unit provides logistical and policy support for the Program. The Operations Unit provides geotechnical consultation, rule interpretation guidance, civil penalties administration, and program monitoring. The Resource Inventory Unit identifies sensitive resource sites, develops management strategies for these sites, and provides a biologist's technical consultation to the field.

Operation Planning

Planning to protect forest resources during operations varies in intensity according to the potential for effects on resources. Planning intensity ranges from getting basic information about the location and type of operation to specifying details of the operation in writing.

* Notification of Operation

ODF formally learns of plans for a forest operation when a Notification of Operation form is submitted to one of its offices. Notification forms are supplied at any ODF office. By law, the operator, landowner, or timber owner is required to make this notification. Certain minimum information is required, accompanied by additional information necessary to ODF.

ODF sends copies of notifications to other interested parties and agencies. Copies go to the operator, landowner, and timber owner regardless of which one submitted the notification. Copies are also sent to the Department of Revenue, the Oregon Occupational Safety and Health Division (OR-OSHA), the county assessor, and the Department of Fish and Wildlife.

Anyone may purchase a subscription to receive copies of these notifications at the local ODF office. The subscriber receives copies of all notifications for a desired geographic area. The ODF will mail these copies to subscribers within three working days of receiving the notifications. Subscribers may use this information to contact the operator or landowner, or to submit comments to ODF about the planned operation. ODF evaluates and responds to any comments received.

* Operation Evaluation and Priority-Setting

A planned operation cannot begin for 15 calendar days following notification. This waiting period is to allow the Forest Practices Forester to evaluate the site and the operation's potential for resource disturbance. The Forest Practices Forester uses this

evaluation to set priorities for preventive efforts. The high and medium priority operations are most intensively planned and inspected.

Under the Compliance Rule, OAR 629-24-102, operators must apply the BMPs as stated in the rules, unless prior approval is obtained from a Forest Practices Forester to apply alternate practices as BMPs. Sometimes an alternative to a normally-required practice is best suited to a specific site. Such alternate practices always require written prior approval. Forest Practices Foresters evaluate whether the normally-required BMP is necessary to achieve the purpose of the rule, or whether the alternate practice will achieve equal or better results.

Operators on sites given low priority because environmental disturbance is unlikely may not be inspected before operating. Each operator is supplied a copy of the Forest Practice rules when giving notification. Most operators are familiar with the BMPs in the rules and apply them without instructions from Forest Practices Foresters. Should an operator fail to apply a BMP necessary to accomplish the purpose of the rules, a citation, civil penalty, and possibly criminal prosecution will result.

Some operation activities automatically require the Forest Practices Forester's prior approval to ensure the operator knows how to use the appropriate BMPs. Most of these involve operations that might affect water quality. Two examples are road construction near streams and harvesting on steep, unstable sites above watercourses.

The BMP rules are keyed to types of activity. Operators take their cue as to required BMPs from the type of activity they are conducting. For example, one of the major types of activity is road construction and maintenance. There is a corresponding section of rules. This major section is divided into rules for more specific activities such as road location, road design, road construction, and road maintenance. Operators and Forest Practices Foresters match the activities planned in each individual operation to the applicable BMP rules.

* Pre-Operation Inspections

Another operation planning tool is the pre-operation inspection. The Forest Practices Forester inspects high and some medium priority sites before activity begins, often accompanied by the operator or landowner. Technical specialists from the program staff and agencies such as the Department of Fish and Wildlife may be consulted during the pre-operation inspection. On-site, the Forest Practices Forester determines the resource protection practices needed and sees that the operator understands them. To confirm this, the Forest Practices Forester may write out recommendations to the operator.

* Written Plans

This is the Program's most intensive prevention planning method. A written plan describes how necessary preventive practices will be conducted to protect water quality, soil, air, fish, or wildlife. Specialists from consulting agencies may be asked to review the written plan. The Forest Practices Forester may approve changes to the written plan if unexpected conditions develop during the operation.

Written plans are used to plan two kinds of operations. One involves operations required by rule to have prior approval from the Forest Practices Forester. For these operations, requiring a written plan is the Forest Practices Forester's option. The other kind involves certain operations that may affect rule-specified resources, such as major fish-bearing streams. The rules automatically require a written plan for operating on or near these sites. The written plan must be followed or enforcement action is taken.

Preventive Inspections

* In-Progress and Post-Operation Inspections

The next step after operation planning is be sure of proper completion of the expected practices. Forest Practices Foresters do this by inspecting while the operations are active. They concentrate their inspections on the higher priority operations. Where appropriate, the operator has latitude in choosing the equipment and methods of achieving required results. The Forest Practices Forester discusses planned methods with the operator to be sure the results will follow the rules.

Inspections made after the operator leaves the site focus on determining whether the site is in stable condition as required by the rules. For example, drainage patterns are to be returned to normal or designed to keep sediment-bearing runoff diverted into filtering vegetation and absorbent soils. The operator may be required to return to the site to correct deficiencies, if necessary.

Time spent and the results of inspections are recorded in a data base. The data shows that Forest Practices Foresters spend more time on a typical high priority operation than on a medium or low priority operation. Statewide, they conduct from 13,000 to over 15,000 inspections of operations each year.

* Operator Education and Recommendations

During inspections, Forest Practices Foresters check to see that required practices are being applied. They discuss upcoming aspects of the operation with the operator, reminding the operator

of resource protection needed. These one-on-one inspections are the primary means of educating operators and landowners about required practices.

Where necessary, the Forest Practices Forester reinforces resource damage prevention by writing out recommendations. The Forester writes recommendations on the inspection report form, gets the operator's signature, and gives a copy to the operator.

* **Written Statement of Unsatisfactory Condition**

When an operator fails to follow with an applicable rule and necessary practice, without prior approval, it is termed an unsatisfactory condition. The Forest Practices Forester determines whether timely corrective action can be taken before resource damage is likely to occur. The Forest Practices Forester considers such factors as the risk of damage to protected resources and the time of year. When the Forest Practices Forester judges there is time to correct the unsatisfactory condition, the forester issues a written statement.

The written statement specifies corrective actions and a required completion date. Unsatisfactory conditions must be corrected by the completion date or be considered violations. Enforcement action is taken on all violations.

Enforcement

* **Citation**

Enforcement action is taken whenever a violation occurs. A violation is a failure to follow a statute or rule. When a violation occurs, a citation is issued. The citation states the nature of the violation. An order to cease further violation accompanies each citation. This order requires the operator to stop the activity or the failure to act that resulted in a violation.

* **Order to Repair Damage or Correct Unsatisfactory Condition**

When the damage or unsatisfactory condition resulting from a violation can be practically and economically repaired, an order is issued requiring repair. When issued, the repair order normally accompanies the citation. If necessary, a circuit court order can be sought to obtain compliance with a repair order. The Board of Forestry may authorize the Department to make repairs and then recover costs from the offending party.

* **Civil Penalty**

The State Forester may assess a civil penalty for any violation. The civil penalty is determined by a formula established by rule.

The formula contains several factors including a base fine, a cooperation value, a prior knowledge or prior violations value, a damage to protected resources value, and a repairability/repairs-made value. Penalties may range up to \$5,000 for each violation. The amounts of the fines are designed to make compliance more cost-effective than violation of the rules. Civil penalties are assessed for virtually all violations.

* Criminal Prosecution

Citations will be presented to the county District Attorney in two instances. The first is when the State Forester judges the operator acted knowingly or recklessly in violating the Forest Practice Rules. The second is when the State Forester judges the operator gained monetarily by violating the rules. If the monetary gain exceeds that amount recoverable by a civil penalty, criminal prosecution will be pursued.

Program Monitoring

* Program Implementation Monitoring

The major program monitoring effort to date has been ensuring implementation of the Forest Practice Rules. These rules are best management practices for maintaining water quality. Implementation is monitored by maintaining and analyzing a data base of program activities. Analysis of this program data leads to program management adjustments. Data is compiled in five general categories:

- * Administration, including the budgeted fund levels, personnel levels, and forestry activities in the program.
- * Coordination, involving consultations with other agencies on operations.
- * Prevention activity, including such activities as notifications of operations, pre-operation inspections, on-site inspections, and written recommendations.
- * Enforcement, including reforestation compliance, violations, court actions, civil penalties, and repairs.
- * Complaint investigation, including sources, types, and disposition of complaints.

This data indicates whether the best management practices are being properly administered. If adequately-designed practices are properly administered, water quality is maintained as desired.

Monitoring program implementation also provides information for managing program resources. For example, much of budgeting is based on the workload. Part of program workload is reflected in the number of notifications of operations received each year, the number of high priority operations encountered, and the number of inspections needed.

Implementation monitoring is a good indication of proper program administration. However, it is an indirect indication of design adequacy of the management practices. To address adequacy of the practices, program effectiveness monitoring is being increased.

* Program Compliance Monitoring

A recent addition to program in-stream monitoring is water sampling to determine compliance with TMDL load allocations. Achieving the load allocations of a TMDL should result in the desired water quality conditions and hence maintenance of the beneficial uses. Complying with TMDLs indicates BMPs are properly designed and adequately administered to meet water quality standards and support beneficial uses. Exceeding TMDLs may mean that the program, the BMPs, the load allocations, and the TMDLs need to be reviewed.

Should in-stream monitoring indicate non-compliance with a TMDL or water quality standard, ODF will initiate more intensive investigations in consultation with DEQ. On the basis of such investigations, changes to the program BMPs will be made if needed. ODF may request DEQ to evaluate the need to change water quality standards, load allocations, or TMDLs during scheduled reviews. The Board of Forestry and ODF, in coordination with DEQ and the EQC, will determine the appropriate adjustments.

* Program Effectiveness Monitoring

Effectiveness monitoring is assessing whether control practices are producing the desired results on the condition of the resource. In water quality management, this means evaluation of the condition of the water itself and the resulting condition of beneficial uses. State in-stream water quality standards are to require water conditions that support these beneficial uses. Program effectiveness monitoring may confirm existing practices' design and administration or indicate a need for program modifications.

Program Review and Reporting

Program review and reporting are systematic sources of information on how well the Forest Practices Program is achieving its goals and objectives. The State Forester and the Board of Forestry use these regularly to evaluate the Program. There are three regular reviews of the Program with accompanying reports. These reviews are being reinforced by a new internal effectiveness monitoring effort that encompasses all program elements, including water quality.

* NPS Statewide Water Quality Management Plan Review

Under the provisions of the 1989 update of the NPS Statewide Water Quality Management Plan, each NPS program will be reviewed at regular intervals. The Forest Practices Program will be reviewed cooperatively by appropriate agencies, including ODF and DEQ. The

results of the review will be reported to the agency directors, the Board of Forestry, the Environmental Quality Commission, and the public.

At DEQ's request, ODF will augment this periodic review with a monthly progress report on the Tualatin River basin plan. It will be updated formally until compliance with forestry's load allocations is established. ODF will work closely with DEQ staff as the TSP is consulted and refinement of the load allocations is accomplished. Between formal reports, ODF staff is available for consultation at any time.

* State Forester's Annual Review

Each year, the State Forester invites the directors of other state agencies to meet and review the Program. The purpose of the meetings is to discuss the adequacy of the Forest Practices Program to meet the agencies' related program needs. This annual review is required by forest practice rule OAR 629-24-104. An annual ODF report summarizes the meetings for the Board of Forestry. The report includes any recommendations for adding, deleting, or amending rules.

* Biennial Activity Summary

Each biennium, ODF produces a summary of program implementation monitoring statistics. It is a report of program activities accomplished by forest landowners and the Department. This summary is distributed to cooperating agencies and is available to the public. It provides much of the information included in an annual Program Accomplishment Report prepared for the Board of Forestry. This Program Accomplishment Report is required by ODF internal directive. The report is available to anyone requesting to be on the Board's mailing list.

* Forest Practices Monitoring Program

In 1987, the legislature funded a program staff position to conduct monitoring of all elements of the Forest Practices Program. This internal monitoring program includes the water quality element of the program. Thus, in-stream water quality monitoring for compliance with total maximum daily loads is a segment of this monitoring program. The water quality-related data from this monitoring and review will be included in the NPS Statewide Plan review and report.

Program Adjustment

Forest Practices Program adjustment usually goes through three phases. The first is issue identification. The second is evaluation, during which facts are collected. The third is selection of appropriate action supported by the evaluation.

* Issue Identification

Issues arise from internal review, interagency requests, public input, state legislation, and federal legislation. The Forest Practices Program is dynamic and has been changed in response to issues from all these sources.

* Issue Evaluation

Once an issue is raised, facts are needed to verify the issue and generate solutions. This evaluation is done by the program in one or more ways. Some issues only need to be evaluated by the program staff. Other issues require expertise available from other agencies, and technical committees are assembled to evaluate them. Evaluations are also conducted through public involvement processes. These may include assembling an advisory committee, referring the issue to the standing Regional Forest Practice Committees, or holding public hearings before the Board of Forestry. All these techniques have been used by the program.

* Program Adjustment Actions

A range of actions are available and have been used to address verified program issues. In some cases, additional training for program personnel is scheduled. In other situations, additional emphasis is focused on needed practices through landowner and operator education programs. Clarifying the interpretation of rules by the Department is sometimes enough. When practices need to be added, deleted or changed substantially, the Board of Forestry acts on the rules in the process specified for rulemaking in the Administrative Procedures Act. Circumstances determine the actions selected to adjust program results.

PUBLIC INVOLVEMENT

The Forest Practice Rules were developed in many public meetings of the Board of Forestry and its Regional Forest Practice Committees. This access to the program continues. The public can obtain information and raise issues during each of the Forest Practices Program's main operational processes: program administration; program review and reporting; and program adjustment.

In the program administration process, anyone can obtain access to notifications and written plans. The public has the opportunity to

comment on how operations are planned and to appeal whether operations are in compliance with the Forest Practice Rules. Complaints about operations can be directed to ODF at any time and will receive prompt investigation and response.

Public involvement is provided in the NPS Statewide Water Quality Management Plan. Information will be solicited from the public during the regular periodic program review that is part of the Plan. All program review and activity reports are available to the public for evaluation.

The public has access to ODF and Board of Forestry during the program adjustment process. ODF, the Board, and the Regional Forest Practice Committees all maintain public information mailing lists. Program issues can be brought to ODF or the Board at any time. The Forest Practices Act authorizes the Board of Forestry to assemble advisory committees from the public to address specific issues. The Board's standing Regional Forest Practice Committees hold public meetings and accept testimony from the public when they are convened to evaluate program issues. The Board of Forestry also accepts public testimony at designated times during its meetings. When the Board authorizes ODF to undertake rulemaking, public hearings before hearings officers are conducted as standard procedure.

PROGRAM BUDGET

Established Funding of On-Going Program

Funding of the Forest Practices Program is shared by the state's general fund and a dedicated portion of the Forest Products Harvest Tax. The general fund's share is 60 percent of funding, and the Harvest Tax provides the remaining 40 percent. The general funds come from all state income tax payers, and the harvest tax funds come from Oregon's timber owners as they harvest the forests.

The 1991 Legislative session will consider an ODF proposal to change funding of the program. Program funding would become completely supplied by Forest Products Harvest Tax receipts. At this writing, action is not final on this proposal.

The biennial budget for the program has grown from \$750,000 in 1973-75 to \$6,500,000 in 1989-91. Much of program funding directly or indirectly supports water quality management. The water quality element is such an integral part of the whole Program that it is difficult to precisely separate it from the total budget.

The program's current biennial budget is a stable basis for the on-going activities that are part of this plan. These program water quality management activities are summarized starting on page 6 under Forestry's Existing Program. These activities are described

in detail in the PROGRAM OPERATION section beginning on page 12. The current operating budget will continue to provide these functioning program activities for managing water quality during forest operations.

Sources of Plan's Needed Additional Funding

Some of the additional demands on the program for water quality management efforts are not budgeted. The following activities will require funding in addition to the current operating budget.

- * Compliance Monitoring
- * Effectiveness Monitoring
- * Technical Support for Preparing and Implementing Plans

The additional costs of implementing this plan are detailed in Appendix E.

ODF will pursue funding of these costs from all sources available. These sources include the following possibilities.

- * Budget Decision Packages
- * Special Legislative Proposals
- * Requests to the Legislative Emergency Board
- * Grants from Other ODF Programs
- * Grants from DEQ's Section 319 Funds
- * Grants from Tualatin River Basin Forest Landowners
- * Grants from Federal Agencies

Appendix E shows the sources being pursued for plan activities at this time. The sources will change as alternatives are needed and opportunities develop. Appendix E will be updated to reflect the developing situation.

CONCLUSION

In summary, the key points of the Department of Forestry's water quality management plan are the following:

- * The Board and Department of Forestry are committed to maintaining forestry-related water quality in accordance with state and federal standards.
- * By statute, the Department of Forestry's Forest Practices Program is the means for controlling forest management's phosphorus loading in the Tualatin River. This program has all the mechanisms necessary to continue managing water quality effects from forest operations. The Board of Forestry will modify the program to achieve improved water quality if appropriate.

- * At this time, forest management is a minor contributor to the phosphorus loading of the Tualatin River. With current data, its contribution cannot be accurately measured or separated from background natural sources of phosphorus. The Department of Forestry will conduct effectiveness monitoring, including sequential investigations to determine whether forest management's contribution to phosphorus loadings is adequately controlled.
- * Forest streams' natural variability and complexity present difficulties to managing water quality by assigning load allocations. The Departments of Forestry and Environmental Quality will assemble and consult a technical specialists panel (TSP) to resolve these difficulties.
- * There are unbudgeted planning and monitoring costs associated with implementing this water quality management plan. The Department of Forestry will seek funding from all available sources to implement this plan.

REFERENCES

Brown, G.W., A.R. Gahler, and R.B. Marston, 1973. Nutrient Losses after Clear-Cut Logging and Slash Burning in the Oregon Coast Range. *Water Resources Research*, 9(5): 1450-1453.

Martin, C.W., and R.D. Harr, 1989. Logging of Mature Douglas-fir in Western Oregon Has Little Effect on Nutrient Output Budgets. *Can. J. For. Res.* 19:35-43.

Tiedemann, A.R., T.M. Quigley, and T.D. Anderson, 1988. Effects of Timber Harvest on Stream Chemistry and Dissolved Nutrient Losses in Northeast Oregon. *Forest Science*, 34(2):344-358.

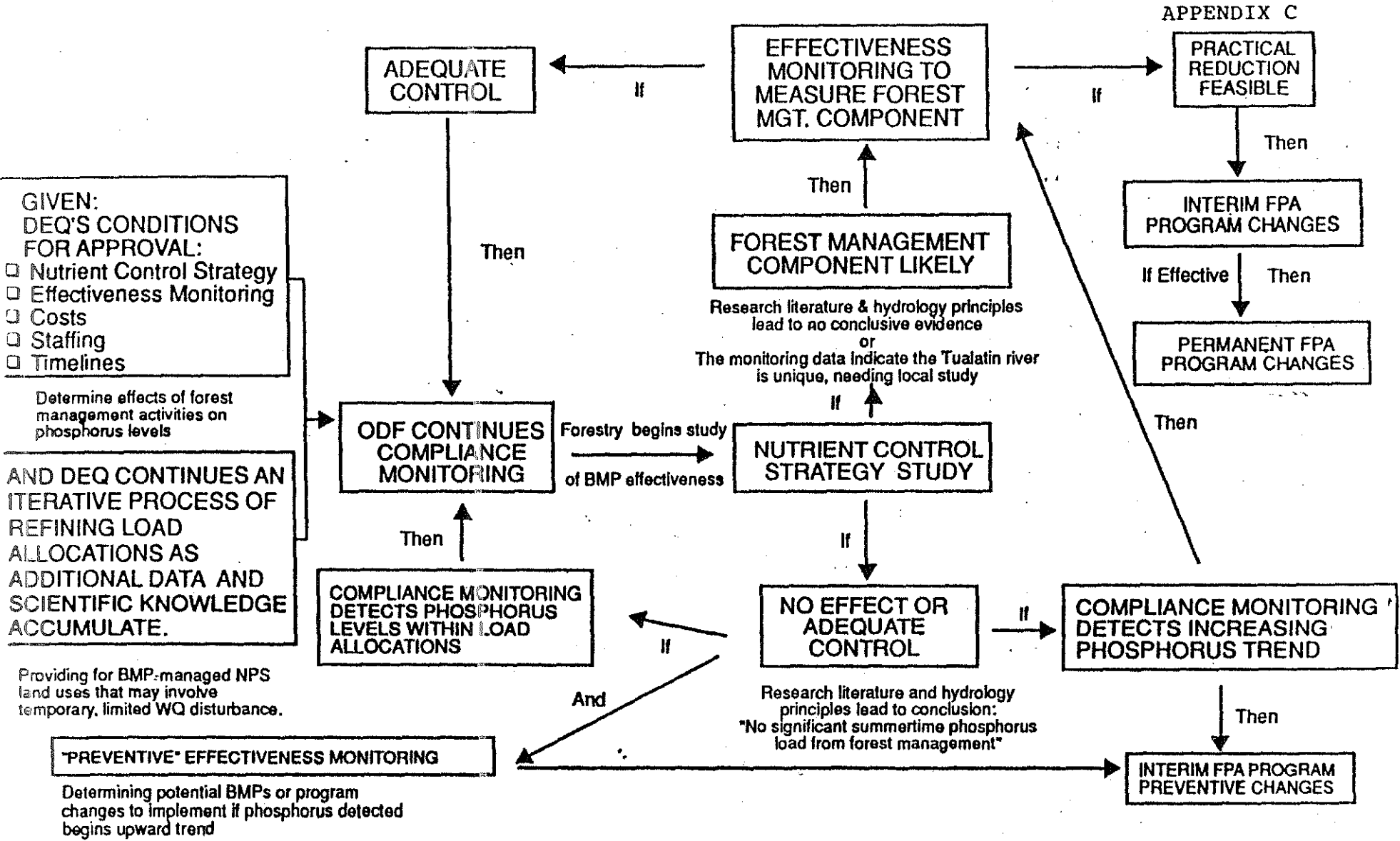
DD:5/18/91:TualPln.IV

THE OREGON FOREST PRACTICES ACT

Available from Oregon Department of Forestry

OREGON FOREST PRACTICE RULES

Available from Oregon Department of Forestry



And cooperate with DEQ in long-term

COORDINATED RESEARCH:

Source, quality, and effect on low-flow phosphorus due to wintertime phosphorus-bearing siltation (validation monitoring)

FORESTRY'S NPS CONTROL PLAN DECISION TREE

OREGON DEPARTMENT OF FORESTRY
TUALATIN RIVER BASIN
MONITORING PLAN

Compliance Monitoring

The Oregon Department of Forestry's (ODF) compliance monitoring plan is incorporated in the NPS Control Plan Decision Tree in Appendix C. Compliance monitoring will be a continuing effort to detect any excessive phosphorus loadings from forest lands so that investigation and appropriate action can be taken.

In 1989, ODF established three sampling sites to be tested every other week during the TMDL compliance period. The TMDL compliance period is May 1 to November 15 annually. The initial monitoring in 1989 was operational in late June.

The three sampling sites are on the upper Tualatin River, Gales Creek, and the East Fork of Dairy Creek. Three sampling sites already established by the Unified Sewerage Agency above Henry Hagg Lake in the Scoggins Creek subbasin contribute to data on loadings from forest land. The forestry sampling sites are higher in the basin than the Department of Environmental Quality's (DEQ) TMDL compliance sites. They are located as close as possible to points of separation between forest land use and other land uses. The data should reflect the effects of forest land. This may clarify the pattern of phosphorus loadings in the basin, contributing to future refinements of the load allocations.

The sites were selected in coordination with other local NPS pollution control agencies. Those agencies are the Washington County Soil and Water Conservation District (SWCD) and the Unified Sewerage Agency (USA) of Washington County. The sampling sites of the coordinating agencies will complement each other by contributing to the basin data base and helping to locate problem areas in the basin.

The 1989 and 1990 forest stream monitoring detected phosphorus levels higher than detected at TMDL sites downstream. This raised questions about background sources of phosphorus and led to an ODF proposal to enhance compliance monitoring in 1991 and 1992. Additional sites would be monitored to exclude possible phosphorus influences from rural residences, agriculture, and Barney Reservoir. This proposal requires additional funding. A proposal to the Executive Department, Governor's Office, and Legislature is attached as Appendix G. This project's results would be analyzed to further clarify the conclusions reached in the Nutrient Control Strategy Study.

Effectiveness Monitoring

* Effectiveness Monitoring Goal and Objectives

The goal of effectiveness monitoring in the Tualatin River basin is to assess and implement BMPs sufficient to adequately maintain recognized beneficial uses of water.

The overall objective of effectiveness monitoring in the basin is to determine that the forestry BMPs chosen are maintaining water quality consistent with appropriate load allocations and economically efficient, environmentally sound forest management.

ODF recognizes the value of confirming the validity of its preliminary assessment of forest management's effects on phosphorus loadings. Four questions that bear investigation constitute the specific objectives of ODF's effectiveness monitoring plan. These four objectives are to cost-effectively answer the following questions:

1. Is there an unacceptable forest management-caused component to the phosphorus loadings being detected now or expected from predictable events on forest lands in the Tualatin River basin?
2. What will happen to phosphorus loadings from forest land when predicted increases in harvesting activity occur?
3. What is a scientifically sound load allocation for forest management activities in the Tualatin River basin?
4. If phosphorus loadings from forest management can practically be reduced, what program changes or additional BMPs should be implemented?

ODF is implementing an effectiveness monitoring program for all elements of the Forest Practice rules, not just the water quality element. This monitoring program's scope is statewide. The effectiveness monitoring plan for the Tualatin River basin becomes a component of this statewide program as well as an element of this plan for the Tualatin River basin.

* Background

Effectiveness of the water quality management element of the program is monitored in part by in-stream water sampling. Water sampling to monitor the effectiveness of the chemical application rules has been a program practice since 1979. The chemical rule adequacy monitoring program has shown the current rules to be successful in protecting beneficial uses of water during chemical applications to forest lands.

In-stream monitoring of water quality subject to nonpoint source pollution effects is a specialized task. Nonpoint source loadings are, by definition, dispersed, unscheduled, and variable. In addition, natural processes combine with man-caused activities contribute to nonpoint source loadings. There is a great deal of variability in these combined nonpoint source loadings in forested watersheds. Therefore, long-term sampling at isolated forest stream sites will be needed for reliably measuring actual forestry-related nonpoint source loadings.

It may take lengthy, detailed research to separate man-caused loadings from natural background loadings. Monitoring data, although less reliable than research data, may be used to the extent it gives reliable evidence of the source of excessive loadings. Sampling biological indicators in streams may facilitate rule effectiveness monitoring, if accurate indicators can be identified.

This long-term, intensive water quality sampling is expensive. Cost/benefit analysis is an appropriate part of the planning process.

Supplying preliminary information on these topics is one of the roles of the NPS Technical Specialists Panel (TSP) ODF requested DEQ to jointly assemble and consult. The TSP member's familiarity with existing research and NPS phosphorus processes can guide planning for effectiveness monitoring.

ODF has consulted TSP members and is considering their assessment of the relationship between forest management activities and phosphorus loadings. The resulting assessment of the situation guides ODF's planning.

* Situation

To date, water quality management on forest lands has focused on parameters more general than phosphorus, such as slope stability and erosion control. Therefore, more information specifically about phosphorus and forest hydrologic system processes must be assembled and evaluated to develop a phosphorus control plan. Some preliminary suppositions can be made about phosphorus from forests and then need to be tested against what research has already learned and augmenting that research as necessary. Four of these suppositions about the relationship between forest management and phosphorus loadings are:

1. During the low-flow compliance period in the Tualatin River basin, the processes that can move phosphorus from forest management activities into the stream system appear to be functioning to a limited degree.

2. Current forest management's contribution to phosphorus loadings is likely to be very small.
3. Current forestry BMP's appear to greatly limit and may virtually eliminate potential phosphorus loadings for all practical purposes.
4. Investigation of forestry/phosphorus relationships should include determining the effects of any predictable changes in forest management including such events as increased harvesting of maturing stands in the Tualatin basin.

The outcome of investigations of existing research and any unique characteristics of the Tualatin River basin will confirm or modify these suppositions and the resulting phosphorus control plan.

Meanwhile, these preliminary suppositions lead ODF to two principles for planning effectiveness monitoring in the Tualatin River basin.

1. Forest management has already accomplished and continues to contribute a reasonable share of phosphorus loading reductions in the Tualatin River basin through the existing mandatory Forest Practices BMPs. This means equitable distribution of required loading reductions would logically be focused on other point and nonpoint sources.
2. ODF should use a sequential effectiveness monitoring plan that considers the expected cost/benefit of: a) monitoring or research investments and b) phosphorus control strategies.

* Sequential Effectiveness Monitoring Plan

ODF's effectiveness monitoring plan is depicted as part of the NPS control plan decision tree in Appendix C.

The first step in effectiveness monitoring is to conduct a comprehensive research literature review and analyze the results for answers to the four objectives. This project is ODF's Nutrient Control Strategy Study. If this study indicates forest management has adequate controls to comply with appropriate load allocations, ODF will simply continue its compliance monitoring program. If this is not the case, ODF will move to a second step involving more intensive effectiveness investigations.

Step two is to conduct intensive monitoring of sites with and without forest management operations in the upper basin. This project would also address the four effectiveness monitoring objectives. If this project indicates forest management BMPs are adequately controlling phosphorus loadings, ODF will return to its compliance monitoring program. If this monitoring shows practical

reductions can be made in phosphorus loadings, Forest Practices Program changes will be determined by ODF and the Board of Forestry.

The staffing, costs, and schedules of the projects involved are detailed in Appendix E.

OREGON DEPARTMENT OF FORESTRY
TUALATIN RIVER BASIN NPS CONTROL PLAN ELEMENTS

APPENDIX E

<u>FORESTRY PLAN ELEMENT</u>	<u>PRODUCT OF ELEMENT</u>	<u>STARTING DATE</u>	<u>COMPLETION DATE</u>	<u>STAFFING NEEDS</u>	<u>FUNDING NEEDS</u>	<u>FUNDING STATUS</u>
Compliance Monitoring: Short-Term Project	Clarifying current phosphorus loadings from forest land with added monitoring sites.	May 1, 1991 (tentative, subject to funding)	October 31, 1992	Existing Department of Forestry personnel funded for additional tasks.	\$40,000 (estimated) for equipment, sample collecting, and testing.	Supplemental request to Legislature in April 1991.
Compliance Monitoring: On-Going Monitoring	Tracking trends of phosphorus loadings from forest land.	May 1 to October 31, annually, indefinitely, beginning in 1993.	Continued annually until determined to be unnecessary.	Existing Department of Forestry personnel funded for additional tasks.	\$8,000 annually (estimated) for sample collecting and testing.	Request to be made in 1993-95 budgeting process to continue monitoring after above short-term project is complete.
Effectiveness Monitoring: Nutrient Control Strategy Study	Comprehensive literature compilation of relationships between forest management activities, natural sources and phosphorus loadings.	March 1, 1991	June 30, 1991	Existing Department of Forestry personnel.	Funded.	\$10,000 cost of study funded by cooperative grant from Tualatin basin forest landowners.
Effectiveness Monitoring: Investigative Effectiveness Monitoring	Necessity will be determined based upon outcome of Nutrient control Strategy Study, and/or unusual increase in phosphorus detected. Monitoring would measure and evaluate control of the forest management component of phosphorus loadings compared to the natural background component.	August 1991, (if necessary).	November 1993 with action on preliminary results by June 1993 (if necessary).	To be determined from monitoring scheme suggested by Nutrient Control Strategy Study (if necessary) and/or unusual increase in total phosphorus detected.	To be determined from monitoring scheme suggested by Nutrient Control Strategy Study (if necessary) and/or unusual increase in total phosphorus detected.	If funding is needed, it will be sought from all feasible sources including legislative, federal agency, and state agency sources.

AGENDA ITEM 13
Attachment 1
Page 40 of 50

PROJECT PLAN APPENDIX F
NUTRIENT CONTROL STRATEGY STUDY
A REVIEW AND ASSESSMENT OF PUBLISHED AND UNPUBLISHED
INFORMATION ABOUT PHOSPHORUS AND FORESTRY
By The College of Forestry, Oregon State University
Dr. Robert Beschta, Forest Hydrologist
March 1 to June 30, 1991

INTRODUCTION

The Oregon Department of Forestry (ODF) is a designated management agency for controlling water pollution from commercial forest management activities. The Department of Environmental Quality's (DEQ) OAR 340-41-470 assigns ODF to develop a program and implement plan to control phosphorus from forest management activities in the Tualatin River basin.

ODF administers the Forest Practices Program, under authority of the Oregon Forest Practices Act, to manage water quality effects of forest management. However, the Tualatin River total maximum daily load (TMDL) rule (OAR 340-41-470) is the first request to show the effectiveness of forestry best management practices (BMP) in controlling phosphorus loadings. Therefore, ODF needs a compilation of research information about forest management and related phosphorus loadings in streams. With this information, ODF can work with DEQ to revise phosphorus load allocations for forestry if necessary. In addition, this information will enable ODF to continue or develop BMPs necessary to maintain forest land phosphorus loadings within those load allocations.

Assembling a comprehensive compilation of all current research knowledge on forest management-phosphorus relationships is the first step in planning an adequate program. ODF needs to know the relationship of current forest management to the phosphorus loadings being detected. ODF also needs to know the likely effects of any anticipated changes in forest management in the Tualatin River basin. If the current state of research knowledge will not supply sufficient guidance, ODF can determine how to proceed in collecting the necessary information on-site in the basin.

GOALS

The Nutrient Control Strategy Study will provide current scientific information to guide the Oregon Department of Forestry in controlling forest-management-related phosphorus loadings to Tualatin River basin waters.

This study will bring together diverse research literature and data. This will be done in an attempt to provide a coherent, comprehensive perspective on what is currently known about the role

of forests and forest management activities in the phosphorus dynamics of forested mountain streams.

This review and assessment will provide insight as to whether additional information is needed to determine the effectiveness of forestry BMPs in limiting phosphorus loadings in the Tualatin River system. The study will help assess the need for and may suggest the form of any forestry program changes that might be appropriate.

OBJECTIVES

This study will gather available research reports to identify concentrations and loadings that indicate (on both an annual and seasonal basis) the following:

1. General background levels of phosphorus in streams draining young, mature, and old-growth forest systems;
2. Effects of geology/soils on instream phosphorus levels;
3. Influence of forest management activities such as harvesting, road construction, site preparation, and burning on phosphorus levels. To the extent possible, this includes the influence of forest practices designed to control effects on water quality;
4. The extent of association between instream phosphorus levels and sediment dynamics;
5. The variability of phosphorus levels associated with both undisturbed and managed watersheds and the sources of that variability (diurnal changes, groundwater regimes, changes in surface and groundwater hydrology, seasonal shifts, instream distribution, etc.);
6. The applicability of phosphorus research results across watersheds of differing characteristics such as geology, soil type, precipitation, vegetative types, and climate.

PROCEDURES

Phosphorus data from a range of research watersheds and other sources throughout the Pacific Northwest will be compiled and analyzed. Sampling accuracy and analytical accuracy will be determined. Where management activities appear to be associated with changes in phosphorus levels, the study will identify activities, site specific effects, downstream effects, and the potential for cumulative watershed effects.

Although emphasizing "total" phosphorus, this review and assessment will also address the relationship of this variable to other forms of phosphorus, i.e. ortho-phosphorus, organic phosphorus, and others.

OREGON DEPARTMENT OF FORESTRY
ENHANCED MONITORING PROJECT PLAN
TUALATIN RIVER BASIN
May 1 to October 30, 1991 and 1992

SUMMARY

The Department of Forestry proposes increasing its water quality monitoring efforts in the Tualatin River basin for two years. This added monitoring responds to requirements of the Environmental Quality Commission's total maximum daily load (TMDL) strategy for reducing excess phosphorus in the river. The additional monitoring sites will clarify and may explain unexpected monitoring results from 1989-90. This clarification is the next step in the Department of Forestry's cost-controlling sequential effectiveness monitoring plan. The additional water monitoring and soil testing will cost \$34,623 over the 1991-93 biennium. This investment may limit the need for future, more expensive monitoring and research. It will also address the request of the Environmental Quality Commission.

PROPOSAL

The Department of Forestry plans to add eight water quality monitoring sites upstream of its existing three sites in the Tualatin River basin. This network of sites is designed to clarify uncertainties revealed by 1989-90 monitoring results at the original three sites by:

- a. minimizing potential influences of land uses other than forest management;
- b. sampling each of the major types of geological parent material underlying the forested portion of the basin;
- c. sampling both recently-harvested and older maturing forest stands; and
- d. obtaining data at multiple points along the course of the major streams in the basin to trace phosphorus level changes.

In addition, the Department will conduct soil testing to investigate links between geology and phosphorus in groundwater and streams.

The objectives of this added monitoring are:

1. Determining and to some extent distinguishing likely sources of the phosphorus levels detected at the three original sites;
2. Gaining further understanding of the fate of phosphorus as it moves downstream through forested stream reaches;

3. Determining appropriate phosphorus load allocation levels for both forest management and natural background sources combined; and
4. Determining effectiveness of current forestry best management practices in adequately controlling phosphorus loadings from forest management.

Attachment 1 details the \$34,623 in funding needed for this monitoring plan. Attachment 2 displays the characteristics of the proposed monitoring sites. Attachment 3 is a map showing the relative locations of the sites on the main streams in the Tualatin River basin.

BACKGROUND

Effectiveness Monitoring Requirement.

This plan is part of the effectiveness monitoring necessary to gain Environmental Quality Commission approval of Forestry's water quality management plan for the Tualatin River basin. This is a monitoring task more specific than any previously required of the Department's Forest Practices Program. The program has always focused on controlling water quality effects from forest management. However, this is the first time there has been a need to determine compliance throughout a basin with a specific numerical standard for a pollutant. The Tualatin River phosphorus TMDL is also the first implementation of this water quality management planning method in Oregon.

Evaluating the Control Program in Place.

The Department's Forest Practices Program is an existing system of best management practices (BMPs) for controlling water pollution from forest management. This BMP system controls soil erosion, one immediately obvious but perhaps not the largest phosphorus source. The BMPs are known to control phosphorus, but how much natural phosphorus and how much man-caused phosphorus is left in the water remains to be learned.

Sequential Effectiveness Monitoring Approach.

The Department of Forestry is taking a sequential approach to BMP effectiveness monitoring in the Tualatin River basin. Knowing everything about how or how much existing BMPs control phosphorus may not be necessary to determine that these BMPs are sufficiently effective. Therefore, the Department is taking steps to quantify BMP effectiveness with adequate, but not total detail. Each step's results will be evaluated. When the knowledge gained provides adequate confidence that a course of action is sufficiently effective, no further investment will be made. This sequential

approach is a cost-effective method of providing adequate BMPs to support beneficial uses of water.

Modeling assumptions rather than in-stream data were used to set phosphorus load allocations for forestry. The Department of Forestry's first step in providing the requested effectiveness monitoring was to determine phosphorus levels in forest streams. In 1989, the Department of Forestry began monitoring one site on each of the three most forested tributaries of the Tualatin River. A few initial sites were expected to determine whether forest lands were in compliance with load allocations. If forest streams held too much phosphorus, then additional sites would be established to investigate the causes.

Intuitively, the three initial monitoring sites were expected to detect total phosphorus levels below the load allocations. Phosphorus levels were expected to accumulate, increasing as the waters from forested streams reached mixed land use areas surrounding the Department of Environmental Quality's uppermost TMDL points in the river system. However, monitoring detected a different situation. Phosphorus levels at the forested monitoring sites were higher not lower than at the downstream TMDL sites.

Now additional monitoring sites are needed to investigate the phosphorus sources and processes causing this situation in the forested streams of the basin. Combining additional monitoring with Oregon State University's ongoing study of existing research on forestry and phosphorus may explain the situation. If so, and natural phosphorus sources predominate, the Department can be confident in its BMPs' effectiveness. The Department can then reduce its monitoring budget to simply watch particularly for phosphorus levels exceeding appropriate load allocations.

If the causes behind the situation are not clear, or indicate significant man-caused sources, additional intensive monitoring funds can be sought. Additional funding will be necessary to determine specific man-caused sources and program changes that will control them. This added need for funds was not known in time to include it in the Department's normal budgeting process. Therefore this request is being made during the legislative approval process.

Costs of Monitoring.

Costs of testing the added water samples will be much higher than when only three sites were being monitored. This is because Unified Sewerage Agency (USA) of Washington County cannot continue sample testing for the Department. USA cannot stretch their laboratory capacity to accommodate the Department's additional samples. Needing more than three samples, the Department must contract the water testing to some other laboratory.

There will also be added costs of collecting more samples. Additional personal services funds will be needed for Department personnel from Forest Grove District to collect the samples with some help from local water districts. Sample collectors will also be adding stream flow measurements to the sampling procedure. Stream flow was not measured in 1989-90. This will require purchasing some flow-measuring equipment and training personnel to use it.

Soil sampling and testing will also add to monitoring costs. Soil information will be obtained to investigate the linkage between the particular geology of the basin and water reaching streams. General soils mapping is not specific enough to provide sufficient information for this investigation.

ALTERNATIVES

If this project were reduced in size, postponed, or eliminated, it is likely that more intensive and costly monitoring would be needed later. In addition, a lack of sufficient data may concern the Environmental Quality Commission to the extent that it will not approve Forestry's phosphorus control plan for the Tualatin River basin. The Department of Environmental Quality reports it may then issue a compliance order and perhaps seek civil penalties from the Department of Forestry.

RECOMMENDATION

The Department of Forestry recommends the Governor's Office and Executive Department approve this project's funding as a necessary addition to the Department of Forestry's 1991-93 biennial budget proposal to the 1991 Legislature.

91-2mnr.Pro

FISCAL IMPACT WORKSHEET
DRAFT
OREGON DEPARTMENT OF FORESTRY
ENHANCED MONITORING PROJECT PLANS
TUALATIN RIVER BASIN
May 1 to October 30, 1991 and 1992

<u>Effect on Expenditures (By Fund):</u>	<u>Fiscal</u> <u>1991</u>	<u>Fiscal</u> <u>1992</u>	<u>Fiscal</u> <u>1993</u>
COLLECTING & TESTING WATER AND SOIL SAMPLES			
Personal Services.			
** Funding 1 Forest Office @ \$1606 (SR14) for 56 days (\$74.16/day) of sampling and measuring flow. (Includes training of 4 days.)	\$1039 14 days	\$1780 24 days	\$1335 18 days
Other Payroll Expenses. (40%)	\$ 416	\$ 712	\$ 534
Services & Supplies.			
** Testing 11 Samples/week for 7 parameters; Total P; Ortho-P; Nitrate N; Ammonia N; Turbidity; Suspended Solids; Chloride; @ \$100 per sample.	\$5500 5 weeks	\$13200 12 weeks	\$9900 9 weeks
** Vehicle use @ \$22 per sampling week.	\$ 110	\$ 264	\$198
** Soil Sample Testing & Supplies.	_____	\$5000	_____
Subtotal	\$5610	\$18464	\$10098
Capital Outlay.			
** Equipment:		\$1700	
Flowmeter & Staff - \$1200			
Gauges, 11 @ \$36 - \$400			
Waders - \$100			
Total	<u>\$7065</u>	<u>\$22656</u>	<u>\$11967</u>

	Fiscal	Fiscal	Fiscal
<u>Effect on Expenditures (By Fund):</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>
TOTAL	<u>\$7065</u>	<u>\$22656</u>	<u>\$11967</u>
Total, Fiscal 1991 (Funded)	\$7065		
Total, Fiscal 1992-93 (Unfunded)		\$34623	
Federal Funds	\$ 0	\$ 0	\$ 0
Other Funds	2826	9062	4787
General Funds	<u>4239</u>	<u>13594</u>	<u>7180</u>
TOTAL	\$7065	\$22656	\$11967

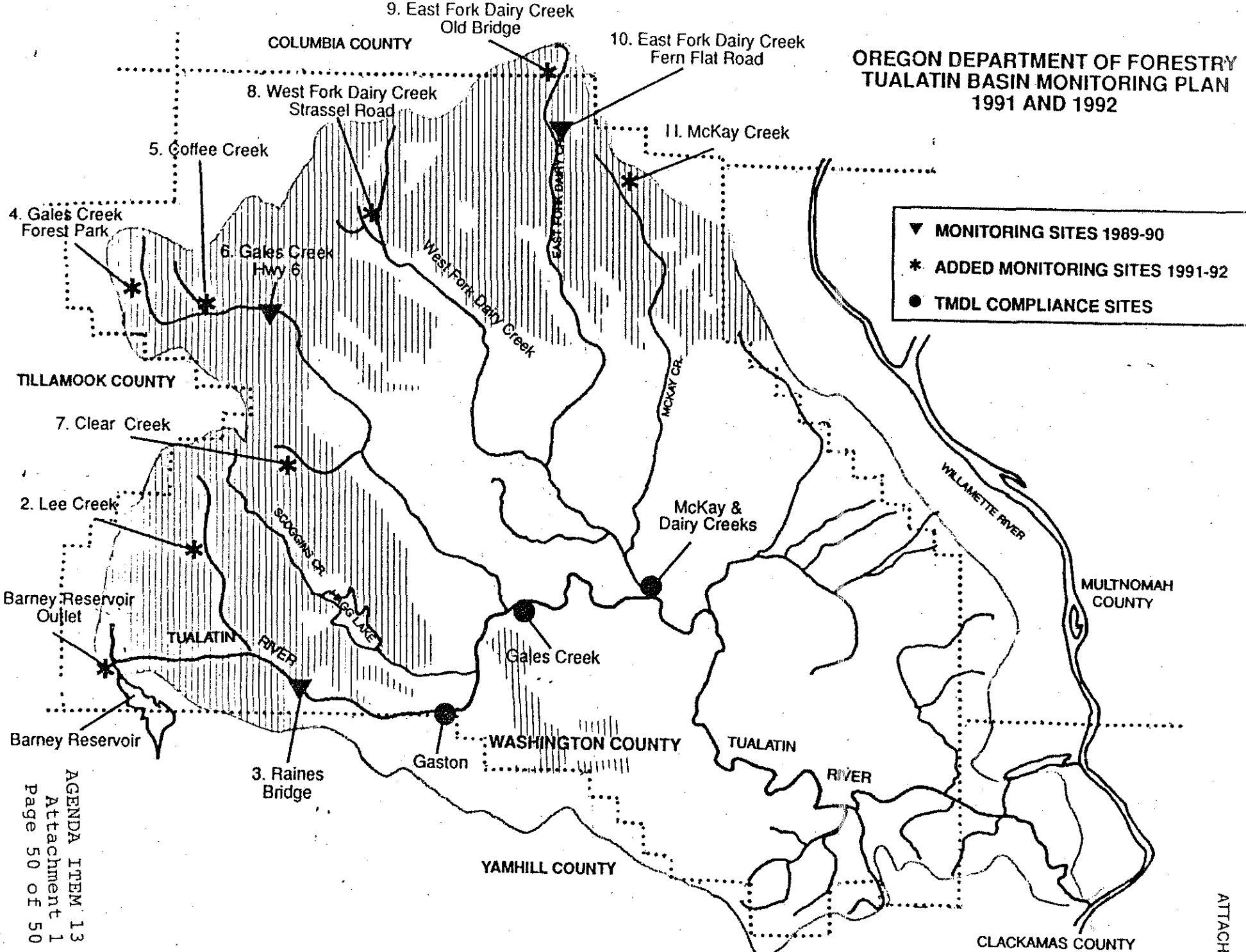
CHARACTERISTICS OF PROPOSED MONITORING SITES
 TUALATIN RIVER BASIN FOREST LAND
 May 1 to October 30, 1991 and 1992

ATTACHMENT 2

Monitored Subbasin/Sampling Location	Geology	Estimated Slope Stability	Estimated % Harvested in Last Decade	NonForestry Activity	Estimated Subbasin Area	Monitoring History
1. Barney Reservoir/Outlet into Tualatin River	30% Older Igneous 30% Younger Igneous 40% Mixed Sedimentary	Not Applicable	5-25%	Barney Reservoir	9 sq. mi.	New Site
2. Lee Creek (Upper Tualatin Trib.)/At Stimson Mainline Road	40% Older Igneous 60% Mixed Sedimentary	Some Flow Terrain	0-5%	Old Pond	6 sq. mi.	New Site
3. Tualatin River (Upper Mainstem Tualatin R.)/Raines Bridge	Mixed	Minimal Movement	5-25%	Barney Reservoir	30 sq. mi.	1989-90
4. Gales Creek (Upper)/Above Forest Park Campground	100% Older Igneous	Occasional Debris Slide	0-5%	None	7 sq. mi.	New Site
5. Coffee Creek (Gales Creek Trib.)/Road Crossing Culvert	40% Older Igneous 30% Mixed Sedimentary 30% Fine Sedimentary	Occasional Debris Slide	25-50%	None	2 sq. mi.	New Site
6. Gales Creek/at Hwy 6, near Diabetic Camp	50% Older Igneous 50% Mixed Sedimentary	Occasional Flow Terrain & Debris Slide	5-25%	Residences	27 sq. mi.	1989-90
7. Clear Creek (Gales Ck Trib.)/Above Forest Grove's Intake	70% Older Igneous 30% Mixed Sedimentary	Moderate Debris Slides	25-50%	None	8 sq. mi.	New Site
8. W Fork Dairy Creek Tributary/Above Strassel Road	20% Younger Igneous 80% Fine Sedimentary	Occasional Debris Slides	90+	None	1 sq. mi.	New Site
9. E Fork Dairy Creek (Upper)/Old Bridge	50% Younger Igneous 50% Mixed Sedimentary	Some Flow Terrain	5-25%	Old Pond	4 sq. mi.	New Site
10. E Fork Dairy Creek (Mainstem)/At Fern Flat Road	50% Younger Igneous 50% Mixed Sedimentary	Some Flow Terrain	5-25%	Residences Old Pond	9 sq. mi.	1989-90
11. McKay Creek (Upper)	100% Younger Igneous	Generally Stable	0-5%	None	4 sq. mi.	New Site

MonSite.Tbl\FP.4

**OREGON DEPARTMENT OF FORESTRY
TUALATIN BASIN MONITORING PLAN
1991 AND 1992**



AGENDA ITEM 13
Attachment 1
Page 50 of 50

4/12/91

ATTACHMENT

Final Draft

**TUALATIN RIVER
WATERSHED MANAGEMENT PLAN**



**A PLAN FOR
CONTROLLING RURAL NONPOINT
SOURCE POLLUTION**

March 1991

TUALATIN RIVER
WATERSHED MANAGEMENT PLAN
for
CONTROLLING RURAL NONPOINT
SOURCE POLLUTION

developed by

WASHINGTON COUNTY
SOIL AND WATER CONSERVATION DISTRICT
Hillsboro, Oregon

under terms of a grant from
THE OREGON DEPARTMENT OF AGRICULTURE

March 1991
Final Draft

WASHINGTON COUNTY SOIL AND WATER CONSERVATION DISTRICT

DIRECTORS

Cal Krahmer, Chair
Dick Kover, Vice Chair
Gail Sheelar, Secretary-Treasurer
Tom Duyck, Member
Ralph Duyck, Member
Howard Grabhorn, Member
Marian Gray, Chair, Nonpoint Source Pollution
Steering Committee

Consultant to the Board of Directors
Art Crook, A. G. Crook Co.

Northwest Oregon Resource Conservation
and Development, Inc. Coordinator
David Dickens

TUALATIN RIVER
WATERSHED MANAGEMENT PLAN
for
CONTROLLING RURAL NONPOINT
SOURCE POLLUTION

TABLE OF CONTENTS

FORWARD	xi
PLAN "ROAD MAP"xiii
SECTION I <u>THE MANAGEMENT PLAN</u>	1
I. <u>INTRODUCTION</u>	1
History and Background	1
Land Use	2
II. <u>GENERAL WATERSHED DESCRIPTION</u>	5
Physiography	5
Climate	6
Hydrology	7
III. <u>WATER QUALITY ASSESSMENT</u>	11
Phosphorus in Surface Water: Ecological Concerns	11
Water Quality Management in the Basin	11
Water Quality Monitoring in the Basin	12
The Phosphorus Cycle and Phosphorus Use in Agriculture	13
Identification of Potential Pollution Sources	14
Highly susceptible sites	15
Potential Pollution Sources in the Tualatin Basin	15
Agricultural runoff	16
Confined Animal Feeding Operations	16
Container nurseries	18
Sewage treatment plant sludge and recycled wastewater	18
General agricultural runoff	20
Soil erosion	20
Upland erosion	22
Streambank erosion	23
Roadside erosion	24
IV. <u>CONTROL STRATEGIES</u>	25
Goals	25
Objectives	25
Strategies for Controlling Nonpoint Source Pollution	26
Efficient use of phosphorus inputs	27
Runoff reduction	27
Confined Animal Feeding Operations	28
Container nurseries	29
Sewage treatment plant sludge and recycled wastewater	29
General agricultural runoff	30
Erosion reduction	30
Upland erosion	31
Streambank erosion	32
Roadside erosion	33

Streamflow Augmentation	33
Subbasin project: Dairy-McKay Hydrologic Unit Area	34
Available Control Options	35
SECTION II <u>IMPLEMENTING THE MANAGEMENT PLAN</u>	37
I. <u>BEST MANAGEMENT PRACTICES and BEST MANAGEMENT SYSTEMS</u>	39
Best Management Practices for Agricultural Pollution Control	39
Nutrient management	39
Phosphorus application rates	39
Fertilizer placement	40
Runoff Control	40
Confined Animal Feeding Operations	40
Container Nurseries	42
Manure Management	43
Application methods	43
Application rates	43
Application timing	43
Site considerations	43
Manure storage	44
Riparian Area Management	44
Erosion Control	46
Management practices	46
Structural practices	47
Recommended Practices for Phosphorus Management	48
Best Management Systems	50
Conservation Planning	51
Voluntary Efforts	52
Enforcement	52
Complaint Procedures	54
II. <u>AGENCIES INVOLVED AND THEIR RESPONSIBILITIES</u>	55
Management Agencies	55
Cooperating Agencies	56
III. <u>ADMINISTRATIVE PROCEDURES</u>	57
IV. <u>PROJECT COSTS</u>	59
Management Needs and Costs	59
Local Assistance Needs and Costs	63
Potential Funding Sources	63
Funding Mechanisms	63
Potential Cost-Share, Grant, and Loan Sources of Funding	65
V. <u>PROJECT SCHEDULE</u>	77
VI. <u>EDUCATIONAL ACTIVITIES</u>	83
VII. <u>PUBLIC INVOLVEMENT</u>	85
VIII. <u>PROJECT REPORTING</u>	91
IX. <u>PROJECT EVALUATION</u>	93
Changes in Land Use Practices and Pollutant Loads	93
Monitoring	93
Plan Review	94

X.	<u>SIGNED AGREEMENTS</u>	97
	Existing Agreements	97
	Agreements Needing to be Developed	97

APPENDICES

- A. Tualatin Basin Total Maximum Daily Loads and Load Allocations
- B. Container Nursery Irrigation Water Management Plan
- C. Best Management Practices for Water Quality and Quantity

ACRONYMS	A-1
--------------------	-----

GLOSSARY	G-1
--------------------	-----

EXECUTIVE SUMMARY

The Tualatin River Watershed is a 710 square mile drainage area encompassing most of Washington, and small portions of Clackamas, Multnomah, and Yamhill Counties in northwest Oregon. Rural areas of the Tualatin River drainage basin are characterized by multiple land uses. Land uses are divided between forested and agricultural areas in the western third, densely urbanized areas in the eastern third, and rapidly urbanizing areas in between.

Agriculture is a significant land use within the Tualatin River Basin. Approximately one-fourth of Washington County's land base is used for cropland agriculture. Agriculture is very important to the economy of the county, which ranked sixth for agricultural gross income in the state in 1989. Annual gross sales since 1985 have exceeded \$100,000,000. Washington County has the third highest dollar return per acre in the state, though it ranks fifteenth in acreage devoted to agriculture.

The Tualatin River heads in northwest Oregon's Coast Range, and flows generally eastward, discharging into the Willamette River. The basin has a modified marine climate, with a very definite winter rainfall pattern. Peak flows normally occur in January, receding to sluggish base flow conditions in the summer.

Nutrients can occur naturally in streams and rivers, but elevated concentrations are often the result of pollution due to man's activities. Of all nutrient inputs, phosphorus has been identified as the most important to prevent from reaching surface water bodies. Nutrients, particularly phosphorus, promote the growth of algae, which can reduce the usefulness of the river and river fed impoundments. Biological productivity in surface waters is usually limited by the availability of phosphorus.

Pollution can be of two types: point source pollution, and nonpoint source pollution. Point source pollution emanates from clearly identifiable discharge points such as wastewater treatment plants and industrial operations.

Nonpoint source pollution is pollution which cannot be traced to a single point, such as a municipal or industrial wastewater plant discharge pipe. Nonpoint sources of pollution in the Tualatin River Watershed include: eroding agricultural lands, eroding streambanks and roadsides, erosion from developing urban areas, runoff from livestock and other agricultural operations, runoff from established urban areas, and failing septic systems. Pollutants from nonpoint sources are carried to the surface water or groundwater through the action of rainfall and irrigation runoff, and seepage.

The quality of the Tualatin River's streamflow has been found to be limited due to the presence of excessive amounts of phosphorus and ammonia nitrogen, resulting in impairment of beneficial uses of the river's waters. Water quality monitoring by the Department of Environmental Quality, the U.S. Geological Survey, and cooperating Designated Management Agencies during the past several years indicates that concentrations of total phosphorus in the Tualatin River and many of its tributaries generally equal

or exceed concentrations which will support beneficial uses. The river has been declared "water quality limited" by the Department of Environmental Quality, under section 303 (d)(1) of the Clean Water Act.

The Oregon Department of Environmental Quality is required by federal court order to establish formal "Total Maximum Daily Loads" (TMDLs) for pollutants for waters designated as water quality limited. In response to this court order, the Department has set maximum limits on the concentrations of phosphorus allowable in the Tualatin Basin's waters on a daily basis during the period between May 1 and October 31 annually.

Each jurisdiction in the Tualatin River Basin has been allotted a portion of the TMDLs, representing the maximum amount of phosphorus which may be discharged by the jurisdiction to the Tualatin River's waters. This amount is the jurisdiction's "Load Allocation" (LA).

The Department has ordered the appropriate management agencies in the basin to develop pollution control plans and programs to meet these limits by June 30, 1993. Oregon Administrative Rules Chapter 340, Division 41, Section 470(3) requires these management plans and sets these limits.

The Oregon Department of Agriculture is the Department of Environmental Quality's "Designated Management Agency" for nonpoint source pollution control activities on agricultural and rural residential lands in the Tualatin Basin. In turn, the Department of Agriculture may designate the local Soil and Water Conservation Districts as its agricultural Local Management Agencies.

This document is the plan for reducing nonpoint source pollution from the agricultural and rural residential lands in the Tualatin Basin, and was created through the joint efforts of the Oregon Department of Agriculture and the Washington County Soil and Water Conservation District. The Washington County Soil and Water Conservation District was constituted in 1955 to actively address Washington County's soil and water resource issues.

Soil and Water Conservation Districts have a long standing record of effectively identifying conservation concerns, developing action plans to address problems, and facilitating assistance to agricultural operators who voluntarily participate in conservation programs. Districts work cooperatively with the U.S.D.A. Soil Conservation Service and the U.S.D.A. Agricultural Stabilization and Conservation Service, which provide technical and financial assistance to individual operators for the installation of conservation measures.

The goal in implementing this plan is to reduce or eliminate all excessive nonpoint source pollution of the Tualatin River from the rural areas, contributing, along with similar efforts by other Designated Management Agencies with responsibilities in the basin, to the restoration of the Tualatin's waters to a level of quality that will preserve and protect their beneficial uses.

Phosphorus loading of the Tualatin Basin's waters from agricultural areas can occur through one of two means: in solution in runoff from agricultural lands, or adsorbed onto soil particles and carried in association with

erosion. In turn, potential contributions of phosphorus from either source can come from a variety of existing characteristics, processes, and practices. While there may not be severe impact on water quality from a single agricultural source or activity, the combined effects from all sources may contribute, along with impacts from other land uses and activities, to the impairment of beneficial uses of the Tualatin's waters.

Objectives of the implementation phase of this plan include:

- * OBJECTIVE 1: Implement the approved Dairy-McKay Hydrologic Unit Area (HUA) Project
- * OBJECTIVE 2: Verify compliance of Confined Animal Feeding Operations with provisions of the existing permitting process
- * OBJECTIVE 3: Verify container nursery compliance with provisions of the approved Container Nursery Irrigation Water Management Plan
- * OBJECTIVE 4: Promote sound irrigation water management and assure no loss of nutrients from land applied sewage treatment plant sludge and recycled wastewater
- * OBJECTIVE 5: Prioritize subbasins outside of the Dairy-McKay Hydrologic Unit Area for treatment based on exceedance of assigned phosphorus load allocations
- * OBJECTIVE 6: Identify and prioritize significant sources of phosphorus pollution from cropland erosion in the prioritized subbasins
- * OBJECTIVE 7: Identify and prioritize significant sources of phosphorus pollution from streambank erosion in the prioritized subbasins
- * OBJECTIVE 8: Establish upland erosion control demonstration sites on basin-representative crops and soils which are especially susceptible to erosion
- * OBJECTIVE 9: Promote the adoption of Best Management Practices and Best Management Systems for erosion control on prioritized cropland
- * OBJECTIVE 10: Establish a streambank erosion control demonstration area at a site representative of others in the basin
- * OBJECTIVE 11: Promote the adoption of cost effective Best Management Practices for protection of prioritized sites of streambank erosion
- * OBJECTIVE 12: Promote Recommended Practices for Phosphorus Management to Protect Water Quality through a coordinated information and education campaign

The Department of Agriculture's strategy for controlling nonpoint sources of pollution relies on existing and expanded programs, accelerating activities in those prioritized subbasins and on those activities which are felt to be the most clearly identifiable sources of both runoff and erosion which may be transporting phosphorus to the basin's waters. The Department's strategy to reduce amounts of polluting substances lies in the reduction of runoff and erosion through a combination of land treatment, land use change, structural measures, and educational programs. These strategies will be carried out on the local level by the Department's local management agencies, the Soil and Water Conservation Districts.

Technical and cost-sharing assistance for installation of certain Best Management Practices is available through traditional U.S.D.A. conservation programs. Coordination of agricultural nonpoint source pollution control activities with federal programs created under the Food Security Act will be critical to the success of agricultural nonpoint source pollution control implementation activities.

Runoff from agricultural operations can come from general, as well as specific sources. Specific potential sources of runoff for which regulatory control programs currently exist include Confined Animal Feeding Operations and container nursery operations.

In general, for runoff control, the implementation phase of this plan will concentrate on accelerating ongoing or planned activities basinwide with the objective of reduction of runoff from Confined Animal Feeding Operations and container nursery operations, while also mounting an educational effort aimed at promotion of Recommended Practices for Phosphorus Management to Protect Water Quality, control of runoff from the general land base, and preventing the loading of phosphorus from land applied sewage treatment plant sludge and recycled wastewater by assuring that Best Management Practices and irrigation water management plans are implemented on farms receiving these materials.

Sediment eroding from uplands, streambanks, and roadsides is a potential source of phosphorus, but the impact of erosion on instream phosphorus levels is not clear at the present time. In general, for erosion control, the plan, as laid out in the Soil Conservation Service's Dairy-McKay Hydrologic Unit Area project, which has been approved and initiated, is seen as the cornerstone of implementation efforts to reduce upland and streambank erosion in the basin. Efforts and results obtained in this geographic area will be used as a model for future efforts in other subbasins prioritized by:

1. Water quality monitoring data for subbasins
2. Ranking of soils having the greatest erosion potential
3. Ranking of cropping types with greatest erosion potential
4. Ranking of soils with respect to potential contribution to instream phosphorus levels

Along with these efforts, the district will assist with roadside erosion control by providing technical assistance to the agencies with authority in this area.

In the Tualatin Basin, the Soil and Water Conservation Districts and federal Soil Conservation Service staff are available to assist landowners in evaluating effective practices for reducing runoff and soil erosion on their farms. Personnel in these offices also design and assist with implementation of practices, and assist in identifying sources of cost-sharing funds for the construction and/or use of some of these practices.

Appropriate management practices for individual farms will vary with the specific cropping, topographical, environmental, and economic conditions existing at a given site. Due to these variables, it is nearly impossible to recommend any Best Management Practices for Tualatin Basin farms as a whole.

Agricultural Best Management Practices for pollution control are those management practices and structural measures which are determined to be the most effective, practicable means of controlling and preventing pollution from agricultural activities. Best Management Practices are actions taken by each individual agricultural operation for the achievement of water quality goals.

Recommended Practices for Phosphorus Management
to Protect Water Quality

- * Utilize soil erosion control practices to minimize runoff and soil loss.
- * Base phosphorus application rates on realistic yield goals.
- * Credit phosphorus contributions from manure and other organic wastes.
- * Apply phosphorus at recommended rates for crop production.
- * Apply phosphorus in accordance with crop nutrient requirements.
- * Incorporate broadcast applications of corrective phosphorus fertilizer; band-apply maintenance fertilizer.
- * Store manure in properly located and constructed facilities during periods when land application is not suitable.
- * Avoid manure applications to saturated soils.
- * Incorporate manure applications.
- * Apply manure uniformly.
- * Control runoff from barnyards and feedlots.
- * Install filter strips adjacent to surface waters receiving runoff from cropland fields.

A detailed listing of specific practices and management measures which can be employed to control or reduce the risk of agricultural pollution are contained in Section II, Chapter I of this document. Best Management Practices and land use changes are most effective when selected and installed as integral parts of a comprehensive resource plan based on natural resource inventories and assessment of management practices. The result is an approach to the solution using the Best Management System concept. Best Management Systems use Best Management Practices and land use changes which are designed to be complementary, and when used in combination, are more technically sound than when considering each practice separately.

The Soil and Water Conservation District policy for assisting land owners and operators with their water quality initiatives is that all proper analyses of alternative actions to improve water quality are based on a conservation plan. The conservation plan is a comprehensive land management plan used for making decisions about applying Best Management Practices to conserve soil, water, and related plant and animal resources on all or part

of a farm unit. The conservation plan addresses site-specific problems through the selection of individual Best Management Practices or Best Management Systems to be implemented for the protection of natural resources.

The Soil and Water Conservation District intends to achieve its water quality goals through the volunteer efforts of its cooperators. Control of nonpoint source pollutants from agriculture is carried out in a cooperative spirit through the volunteer efforts of individual farmers, aided by the informational, technical, and financial assistance of local, state, and federal agencies. The implementation phase of this plan focuses on education and voluntary adoption of Best Management Practices to prevent pollution at its source.

Voluntary efforts to implement Best Management Practices will be encouraged by the Soil and Water Conservation District at all stages throughout the information and education campaign. If voluntary efforts fail to achieve necessary reductions in pollutant loadings to the basin's waters from agricultural sources, any other compliance efforts should be invoked as a last resort only after all efforts at voluntary compliance have failed.

If voluntary compliance fails to achieve water quality goals, then more aggressive means of ensuring compliance with load allocations, focusing on the largest remaining sources, will be employed.

By the end of June 1992 and in November 1992, the Oregon Department of Agriculture, with the cooperation and assistance of the Department of Environmental Quality, will assess the compliance status of agricultural sources in the Tualatin Basin. This assessment will include:

1. an accounting of the numbers and kinds of practices that have been applied,
2. where possible, an estimate of the amount of phosphorus/sediment that has been prevented from entering the waters of the state,
3. a summary of available monitoring data, and
4. identification of the potential remaining sources of phosphorous loadings.

If monitoring data by the end of June 1992 indicate that the load allocations for agriculture are not being met, a more aggressive enforcement regime will begin. This will start by concentrating on sub-basins known to be out of compliance and on operations/practices known to be contributing sources of phosphorus.

Enforcement of regulations related to CAFOs will be accelerated by shifting from the existing complaint driven system (described in the Control Strategies section) to a more aggressive inspection and enforcement referral program using the priorities generated in the inventory phase of this plan. If necessary, every CAFO in problem subbasins will be inspected for compliance.

In addition, if monitoring data by June 1992 indicate that the load allocations for agriculture are not being met, the Oregon Department of Agriculture will begin working with the affected counties to explore and examine the possibilities for various enforcement mechanisms to be incorporated into ordinances, covering the range of options from allowable maximum discharge limits to the implementation of nutrient management and conservation plans for operations in the basin.

If the accelerated enforcement described above results in compliance with the load allocations by November 1992, then the implementation of county ordinances for enforcement would not be required. If, however, monitoring data by November 1992 demonstrates that load allocations are still not being met, then county ordinance enforcement mechanisms would be implemented in January 1993.

Through June 1, 1993, the Oregon Department of Agriculture will be working with container nursery operations to ensure compliance with provisions of the statewide Container Nursery Irrigation Water Management Plan. After June 1, 1993, any container nursery operations existing prior to that date and having irrigation season discharges without a Water Pollution Control Facilities permit from the Department of Environmental Quality will be referred to that agency for enforcement.

The cost of implementing this plan is estimated at approximately \$7,000,000. In the absence of detailed, site-specific inventories of resource problems and quantification of phosphorus loadings, this cost figure reflects the best current estimate of needs. Related figures in various treatment needs categories may require refinement as implementation progresses.

The Oregon Department of Agriculture intends to implement this plan in mutual cooperation with the Soil and Water Conservation Districts, the Department of Environmental Quality, the Soil Conservation Service, the Agricultural Stabilization and Conservation Service, the Oregon State University Extension Service, and other agencies.

The Soil and Water Conservation District, the Oregon Department of Agriculture, and other cooperating agencies plan to avail themselves to all opportunities to obtain grants, cost-sharing funds, assessments, and monies from any other sources which can be used to accelerate the installation of nonpoint source pollution controlling practices during the next three years. The Soil Conservation Service's Hydrologic Unit Program, EPA's 319 grants, the Governor's Watershed Enhancement Board grants, and other federal and state programs are potential sources of these funds. Traditional loan and grant programs include the Farmers Home Administration's rural and agricultural loan programs and the Resource Conservation & Development Program, administered by U.S.D.A.

In addition to the USDA grant and cost share opportunities traditionally available to the agricultural community (as well as other grants potentially available such as the Governor's Watershed Enhancement Board and EPA's nonpoint source implementation grants), stable, long term funding will be required to operate an agricultural base program for water quality management. To carry out its responsibilities as Designated Management Agency, the Oregon Department of Agriculture needs a full time staff person to work on implementation of the Tualatin Watershed Management Plan. The

affected Soil and Water Conservation Districts also need additional stable resources.

In the short term, the Oregon Department of Agriculture and the cooperating agencies will work to pass appropriate proposed legislative initiatives to support the development of mechanisms to fund agricultural planning and implementation efforts in water quality limited basins.

If efforts to pass legislation in the 1991 session fail, the Department, working with cooperating agencies, will continue to assist in efforts to seek stable funding during the remainder of 1991 and 1992. Sources which will be explored include county transfer of funds for rural implementation efforts (which would provide funds to the Soil and Water Conservation Districts); formation of a special water quality management district that would have the ability to collect fees; extension of Unified Sewerage Agency's Surface Water Management fee program; and others as they are identified.

If by October of 1992, a stable funding mechanism has still not been identified, the Oregon Department of Agriculture will begin coordinating efforts with other agencies to seek new sources and develop new initiatives in the 1993 legislative session for funding of agriculturally related nonpoint source management efforts.

Attaining compliance with the total maximum daily load requirement may prove to be very challenging, particularly in the short-term. There are technical questions which need to be resolved, and some of these questions will be addressed through the implementation of this plan. The progress and success of implementation efforts will be assessed through determination of changes in land use practices and the measurement of water quality changes over time. The Department of Agriculture will conduct periodic internal and public reviews of the plan and results of actions, to determine whether changes are needed.

FORWARD

The quality of the Tualatin River's streamflow has been found to be limited due to the presence of excessive amounts of phosphorus and ammonia nitrogen. These nutrients can occur naturally in streams and rivers, but elevated concentrations are often the result of discharges from sewage treatment plants, overland storm water flow through urbanized areas, and runoff from agricultural and forested lands, resulting in impairment of water quality.

The Oregon Department of Environmental Quality, as required by federal court order, has initiated action to reduce the phosphorus and nitrogen loads in the Tualatin River and its tributaries. The Department has set maximum limits of phosphorus allowable on a daily and seasonal basis, and has ordered the appropriate management agencies to develop pollution control plans. These plans are to be implemented over a three year period, with the goal being a reduction in phosphorus loads to levels at or below the limits established by the Department.

This document is the plan for reducing nonpoint source pollution from agricultural and rural residential lands in the Tualatin Basin. The plan was developed by the Washington County Soil and Water Conservation District, and the Oregon Department of Agriculture, the agricultural Designated Management Agency. Funding of the plan development was through a grant from the Oregon Department of Agriculture.

The Washington County Soil and Water Conservation District retained the consulting firm of A.G. Crook Company, Beaverton, Oregon, to assist in the research, writing and production of the plan, except for sections dealing with authorities, budgets, reporting, agreements, and the monitoring and inventorying plan. The district also contributed funds, along with numerous other Tualatin Basin entities, to support the development of the Washington County Water Management Committee, under whose guidance the several components of the basin's water quality improvement plan are being developed. The Washington County Water Management Committee retained as consultants Economic and Engineering Services, Inc., Olympia, Washington.

LOCATION OF DEQ NPS PLAN REQUIREMENTS IN THIS DOCUMENT

DEQ PLAN REQUIREMENT	LOCATION IN THIS PLAN		
INTRODUCTION	Section I.	Chapter I.	Introduction
"Why is this plan being produced?"	Section I.	Chapter I.	Introduction History and background
"What is this plan expected to accomplish?"	Section I.	Chapter III.	Water Quality Assessment Control strategy/objective
PROBLEM STATEMENT	Section I.	Chapter II. Chapter III.	General Watershed Description Water Quality Assessment Identification of potential pollution sources
Physical Setting	Section I.	Chapter II.	General Watershed Description
Water Quality Problems	Section I.	Appendix A. Chapter III.	Tualatin Basin TMDLS Water Quality Assessment Water quality monitoring in the basin Identification of potential pollution sources
Institutional Infrastructure	Section II.	Chapter II.	Agencies Involved and Their Responsibilities
CONTROL STRATEGY	Section I.	Chapter IV.	Control Strategy
Goal Statement	Section I.	Chapter IV.	Control Strategy Goal
Objectives	Section I.	Chapter IV.	Control Strategy Objective
Strategy	Section I.	Chapter IV.	Control Strategy Strategy for controlling NPS pollution
Available Control Options	Section I.	Chapter IV.	Control Strategy Available control options
Process for Selecting Options	Section II.	Chapter I.	Best Management Practices/Best Management Systems
BMPS to be Installed	Section II.	Chapter I.	Best Management Practices/Best Management Systems
Responsibility for Plan Implementation	Section II.	Chapter II.	Agencies Involved and Their Responsibilities
Monitoring and Evaluation Strategy	Section II.	Chapter IX.	Project Evaluation
Information and Education	Section II.	Chapter VI.	Educational Activities
Periodic Plan Reviews/Adjustments	Section II.	Chapter IX.	Project Evaluation Plan review
Time Schedule	Section II.	Chapter V.	Project Schedule
PUBLIC INVOLVEMENT	Section II.	Chapter VII.	Public Involvement
AUTHORITIES	Section I.	Chapter I.	Introduction History and background
BUDGET	Section II.	Chapter IV.	Project Costs Budget
REPORTING	Section II.	Chapter VIII.	Project Reporting
SIGNED AGREEMENT	Section II.	Chapter X.	Signed Agreements

SECTION I

THE MANAGEMENT PLAN

I. INTRODUCTION

History and Background

The Tualatin River Watershed is a 710 square mile drainage area encompassing most of Washington, and small portions of Clackamas, Multnomah, and Yamhill Counties in northwest Oregon. Land uses are divided between forested and agricultural areas in the western third, densely urbanized areas in the eastern third, and rapidly urbanizing areas in between.

The quality of our nation's water supplies is of growing concern to all Americans. The discharge of wastes into our rivers and streams from "point" sources, emanating from clearly identifiable discharge points such as industrial sites and sewerage collection facilities, has long been recognized. Pollution of rivers and streams also takes place when rainfall and irrigation runoff washes contaminants from "nonpoint" sources into watercourses where it collects in rivers and lakes.

Nonpoint sources of pollution in the Tualatin River Watershed include: eroding agricultural lands, eroding streambanks and roadsides, erosion from developing urban areas, runoff from livestock and other agricultural operations, runoff from established urban areas, and failing septic systems.

Additionally, more rivers and lakes are continuously "polluted" naturally by the geologic erosion process as the forces of nature wear down the land. Naturally occurring substances which degrade the aesthetic and useful quality of our water resources have been present in rivers and streams throughout history, and will continue to "contaminate" our water supplies to some degree in spite of human efforts in regulation and control.

The Washington County Soil and Water Conservation District was constituted in 1955 to actively address the county's soil and water resource issues. The boundaries of the district include the entire county. The primary goal of the district is to conserve, protect, and develop all the natural resources in the county for the economic and environmental benefit of all county residents. The district has a seven-person Soil and Water Conservation District board serving Washington County. Members are elected in the general election.

The district has a long standing record of effectively identifying conservation concerns, developing action plans to address problems, and facilitating the availability of technical and financial assistance to agricultural operators who voluntarily participate in conservation programs. Technical conservation assistance is made available to district landowners through a Memorandum of Understanding with the United States Department of Agriculture Soil Conservation Service.

Conservation initiatives taken up by the Soil and Water Conservation Districts focus on both quantity and quality of the county's natural resources. Consequently, the recent swell of public concern for the quality of Tualatin Basin waters focuses on an issue which has been actively addressed by the Soil and Water Conservation Districts since their inception.

In the recent past, rules addressing the state's and nation's water quality have been formulated. Both federal and Oregon state laws and regulations require that instream water quality standards for the Tualatin River be met. A court decree issued in June of 1987 directed the federal Environmental Protection Agency and the Oregon Department of Environmental Quality to establish formal Total Maximum Daily Loads on waters designated as "water quality limited" under section 303(d)(1) of the Clean Water Act. Subsequently, the Department of Environmental Quality set maximum limits for phosphorus and ammonia discharged to the Tualatin River.

In September of 1988, the Oregon Environmental Quality Commission adopted Oregon Administrative Rule 340-41-470 (updated in January of 1990), which requires that nonpoint source program plans be developed by all jurisdictions in the Tualatin River Basin. Plans must specifically describe how nonpoint source activities will be managed in the watershed to comply with the total maximum daily loads for phosphorus established for the period from May 1 to October 31 annually. TMDLs are to be achieved by the responsible Designated Management Agencies by June 30, 1993.

The Department of Environmental Quality and the Oregon Department of Agriculture first agreed, in a Memorandum of Understanding, dated April 28, 1982, that responsibility for developing plans and leadership in controlling nonpoint source pollution from private agricultural lands of the state be vested in the Oregon Department of Agriculture. This agreement was updated on August 4, 1989. Thus, the Oregon Department of Agriculture became the Designated Management Agency for nonpoint source pollution control planning and implementation efforts for agricultural lands in the state, including the Tualatin Basin. In turn, the Oregon Department of Agriculture may designate the Soil and Water Conservation Districts in the affected counties to be its Local Management Agencies in the Tualatin Basin to coordinate local efforts in managing the agricultural component of the Tualatin Basin Plan.

Land Use

Rural areas of the Tualatin drainage basin are characterized by multiple land uses. Suburban communities have proliferated in the past years of rapid area-wide population growth. Since 1985, the population in Washington County has grown by 41,833 persons, making the 1990 population 309,883. This is an average annual increase of more than 3% for this 5 year period. Much of the population is centered in urban and suburban areas, though small acreages with a residence, outbuildings, and limited space for livestock and gardens are found throughout the basin.

Agriculture is a significant land use within the Tualatin River Basin. Approximately one-fourth of the Washington County's land base is used for cropland agriculture. Agriculture is very important to the economy of the county, which ranked sixth for agricultural gross income in the state in 1989. Annual gross sales since 1985 have exceeded \$100,000,000. Washington County has the third highest dollar return per acre in the state, though it ranks fifteenth in acreage devoted to agriculture.

One hundred twenty-five to 150 different irrigated and nonirrigated crops are raised in the county. The eight major income-producing commodities in

order of income are: special horticulture, dairy and beef and related products, small fruits and berries, dryland grain, row crops, grass and legume seed, hay and forage, and tree fruits and nuts. A portion of the producing acreage is located within the Urban Growth Boundary, and is being threatened by urban expansion.

Best estimates of current land use and operating unit numbers were determined from the 1987 Bureau of Census Agricultural Statistics, the 1988-1989 Oregon Agricultural and Fisheries Statistics, the Washington County Extension Service, Washington County government, and discussions with individuals. These statistics are compiled by county, and no attempt has been made to convert them to basin-wide figures. However, since the land area of Washington County is roughly equal to the land area of the Tualatin River watershed, and since the county and watershed boundaries are generally the same shape, the county figures offer a good estimate of what might be found in a basin inventory. Land use in the county is summarized in Table 1.

Table 1 Land use in Washington County

<u>Land Use</u>	<u>Acres</u>
Urban	67,800
Rural city	1,100
Non-farm forestland	246,280
Agriculture	150,100
Grain	37,200
Hay/silage	24,200
Grass & legume seed	18,500
Field crops (potatoes, peas)	750
Tree fruits & nuts	7,490
Small fruits & berries	4,240
Vegetables	5,975
Container nursery	1,500
Greenhouse	300
In-ground nursery, etc.	1,200
Christmas trees	2,500
Improved pasture	12,000
Unimproved pasture	8,000
Miscellaneous specialty	500
Farm forest, wildlife, recreation	25,745
	465,280

The wine grape industry is expanding very rapidly, and considerable land is being converted into vineyards. The local climate is conducive to horticultural nursery enterprises, and a significant portion of the nation's nursery stock is produced in the area. Oregon is ranked third in the nation in the production of nursery stock.

Numbers of farms in different size categories are listed in Table 2. The tendency in the county is for the size of farms to be continually shrinking, while the number is steadily increasing. Average size in 1989 was 79 acres.

Table 2 Number of farms in various size classes

<u>Size class</u>	<u>No. of farms</u>
< 10 acres	409
10 - 49 acres	741
50 - 99 acres	230
100 - 499 acres	281
500 - 999 acres	41
1000 - 1999 acres	20
> 2000 acres	2

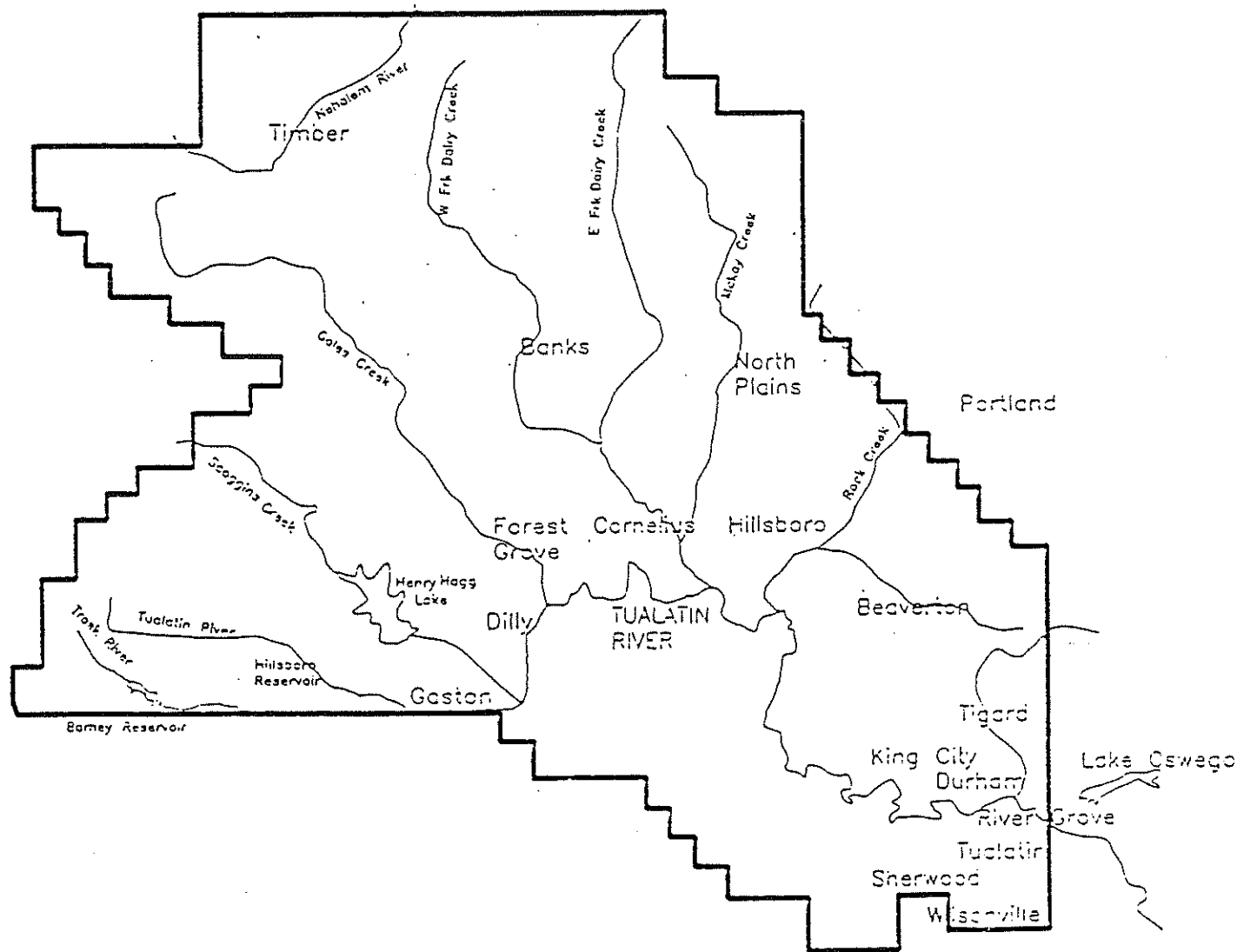
Of the total agricultural land base in the county, approximately 30,000 acres are irrigated, with approximately 20,000 acres served by the Tualatin Valley Irrigation District. The remainder is serviced by wells and direct pumping from the Tualatin River. Irrigated acreage is projected to increase 20% until 2005, and then remain constant through 2040. All irrigation in the drainage is applied by controlled sprinkler systems, which makes control of water readily achievable. Sprinkle irrigation for temperature control is practiced, and requires a higher degree of management. The farmland terrain is fairly flat, from 0-3% slope, to steeply rolling hillsides of 20-30% slopes and more.

This plan outlines the problems and planned solutions to current and potential agricultural and associated rural nonpoint source pollution. Implementation of the plan is intended to reduce or eliminate surface runoff and erosion which carries pollutants into the Tualatin River and its tributaries, particularly during times of low flow when concentrations of these undesirable substances compromise beneficial use of the water supply.

II. GENERAL WATERSHED DESCRIPTION

Physiography

The Tualatin River heads in northwest Oregon's Coast Range and flows generally eastward, discharging into the Willamette River. The southern and eastern parts of the basin are generally lower uplands and smooth valleys used for farming and urban areas. The western and northern portions of the basin are more hilly or mountainous, with timber the predominant vegetation. See Figure 1 for a map of the area.



Washington County
boundary (which generally
approximates the Tualatin
River watershed boundaries)

Figure 1 Washington County, Oregon

The valley area is divided into four parts: terraces, alluvial fans, flood plains, and low foothills that rise out of the valley floor. The terraces are made up of broad, nearly level alluvial and lacustrine material that has been partly dissected by stream channels. The alluvial fans are gently sloping to strongly sloping and consist of material that has been deposited over terraces and flood plains at the mouths of side draws and canyons.

The flood plains lie along the Tualatin River and lower portions of major tributaries and are subject to occasional to frequent flooding during late fall, winter, and spring. There are many meandering drainageways that carry much of the flood water. These flood plains are substantial in area, as they have been formed by flow volumes much larger than the river's channel capacity. A significant amount of the flood plain is used for growing agricultural crops in the spring and summer months.

The rolling foothills are remnants of siltstone and sandstone formations and basalt flows that were eroded and truncated by streams. A large part of the rolling foothills are covered by loose deposits which tend to conform in a general way to the topography of the weathered surface of the underlying material. The thickness ranges from four to many feet, but in some areas the deposits are thin, and have mixed with the underlying material. Alluvial and lacustrine material ranging from a few, to more than 50 feet thick, has been deposited in the old valleys to form the present valley floor that surrounds these gently sloping to steep foothills.

The mountainous headwaters area of the basin is formed of weathered siltstone, basalt and breccia. Topography is gently sloping to very steep. Elevation ranges from 500 to as much as 3,500 feet above sea level.

Climate

The western portion of the Tualatin Basin is only a short distance (less than 40 miles) inland from the Pacific Ocean. The basin has a modified marine climate. Prevailing airflow moving across this area from the ocean greatly moderates the colder temperatures of winter and the heat of summer. Occasional extreme temperatures are associated with outbreaks of dry continental air pushing westward through the Columbia Gorge and across the Cascade Mountains.

The basin has a very definite winter rainfall climate. Seasonal characteristics are well defined, and changes between seasons are gradual. Average annual rainfall decreases from 110 inches along the crest of the Coast Range to 38 inches in the southeastern valley floor. Some 28 percent of the annual total is received in fall, 46 percent in winter, 20 percent in spring, and only 6 percent in summer. Extremes in rainfall for individual years have varied from 26.11 to 65.88 inches at Forest Grove and from 42.68 to 83.30 inches at Timber. Snowfall in the mountainous portion of the basin can be significant, but is normally quite light on the valley floor. Annual snowfall averages 38 inches at Timber. The greatest depth observed was 58 inches on February 1 and 2, 1969. Forest Grove averages 14 inches per year, but has recorded a maximum depth of 22 inches. The distribution of precipitation by month is displayed in Figure 2.

Temperatures are generally moderate, with the average daily low for January at the Valley Floor station being 32° F, with an average July maximum of 82° F. Record extreme temperatures range from -18° F in 1950 to 108° F in 1956. Hot afternoons of 90° F and above occur about 11 days per year at higher elevations, and about 17 days per year on the valley floor. Temperatures of 100° F or more are expected about every other year, and minimums of 0° F or lower about one year in 20.

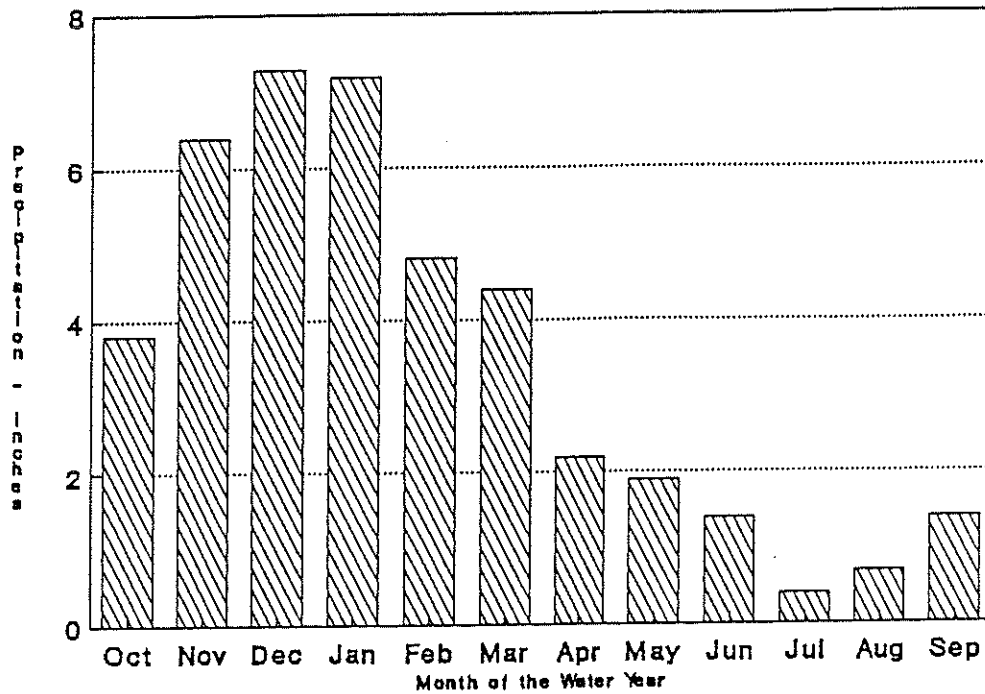


Figure 2 Average monthly precipitation Valley Floor Station, Oregon

Note: The above material has been extracted from "Soil Survey of Washington County, Oregon", United States Department of Agriculture, Soil Conservation Service, in cooperation with Oregon Agricultural Experiment Station.

Hydrology

The Tualatin River drainage area is approximately 710 square miles. Major tributaries include Scoggins Creek, Gales Creek, and Dairy Creek. The Tualatin average annual yield is 1,108,000 acre-feet, with an average daily flow of 1,530 cubic feet per second. A maximum of 23,300 cubic feet per second was recorded December 23, 1933. Scoggins Creek yields an average of 103,600 acre-feet per year, and Gales Creek averages 163,000 acre-feet per year. Two tributaries of Dairy Creek, East Fork of Dairy Creek and McKay Creek, average 77,460 acre-feet and 51,180 acre-feet per year respectively. Trans-basin diversion of approximately 3,000 acre-feet per year from the Middle Fork of the Trask River to the Tualatin River adds to the water supply.

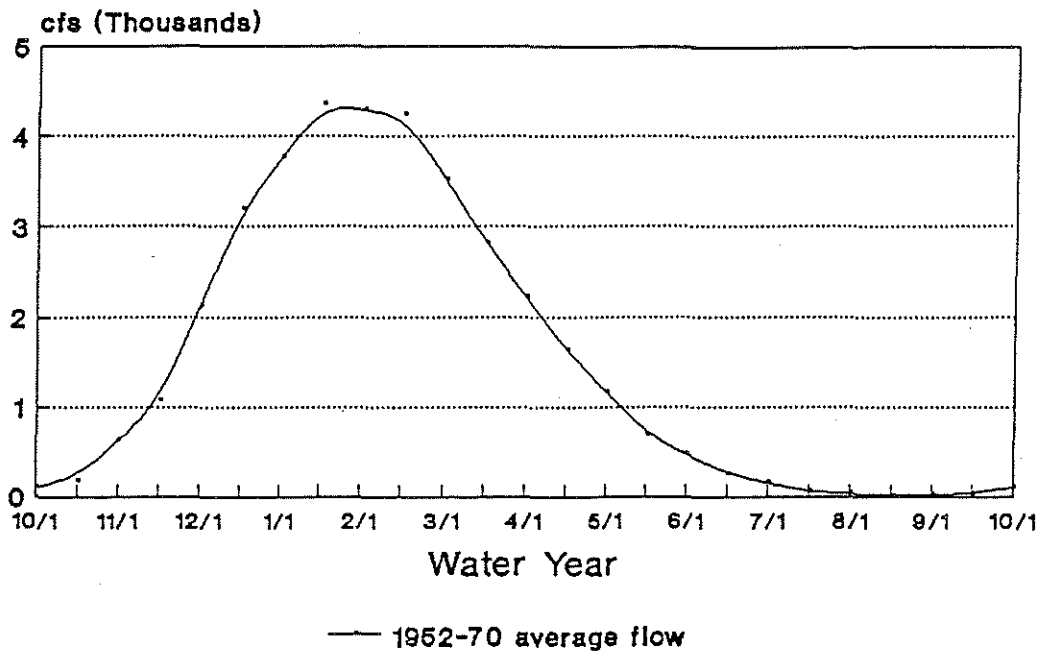


Figure 3 Average annual runoff
Tualatin River at West Linn, Oregon

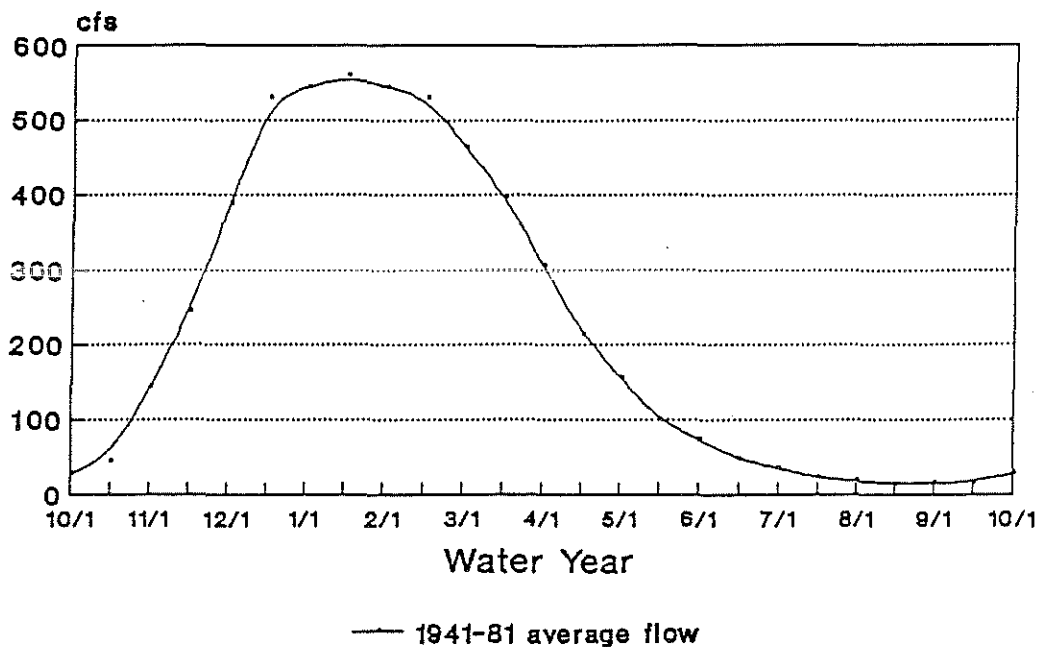


Figure 4 Average annual runoff
Gales Creek near Forest Grove, Oregon

Henry Hagg Lake, constructed on Scoggins Creek, has regulated flow since 1975. Capacity of the reservoir is 59,170 acre-feet, and it is operated for

irrigation water supply storage, flood control, recreation, fish and wildlife, water quality, and municipal and industrial water supply. Distribution of runoff throughout the year is illustrated by the average annual hydrographs of the Tualatin River at West Linn and Gales Creek near Forest Grove, Figures 3 and 4.

Rates of flow are in response to the fall-winter precipitation pattern in the basin. The annual hydrograph begins to rise in October as the rainfall season begins. Flow rates are normally highest in January, and recede to base flow conditions in the summer. Late spring and summer rains are usually too light to generate a significant response in streamflow.

The combined reservoir capacity in the basin is only a small fraction of the average annual flow. Consequently, only minimal control of flooding is possible. Inundation of at least some portion of the flood plain occurs annually.

Oswego canal diverts an average of 50,140 acre-feet per year from the Tualatin River at a point five miles above the West Linn gauging station. Flashboards about four feet in height above the crest of the diversion dam raise the water level, creating a reservoir which ponds water for more than 30 miles upstream in the river.

Groundwater in the Tualatin Basin is limited and not generally well developed. Domestic wells are usually designed for less than ten gallons per minute. Agricultural use of groundwater is minimal.

Note: The statistics cited in this section are from the "Statistical Summaries of Streamflow Data in Oregon, Volume 2. Western Oregon", United States Department of the Interior, Geological Survey Open File Report 84-454.

III. WATER QUALITY ASSESSMENT

Phosphorus in Surface Water: Ecological Concerns

Of all nutrient inputs, phosphorus (P) has been identified as the most important to prevent from reaching surface water bodies. Nutrients, particularly P, promote the growth of algae, which can reduce the usefulness of the river and river fed impoundments. Biological productivity in surface waters is usually limited by its availability.

Additional reasons for the focus on P are that research has identified many of the sources of P contributions to surface waters, as well as management practices to reduce P loadings to surface waters.

Periods of high P loadings to surface waters typically follow runoff-causing events. In addition to elevated stream P concentrations during runoff periods, high P concentrations have been measured in the base flow of streams draining some agricultural watersheds in the United States. This agricultural P generally is carried in either of two forms: in solution, or in association with sediment.

Sedimentation reduces stream and reservoir capacities, contributes to increased flooding, disrupts biological systems, degrades drinking water, and can transport associated nutrients, bacteria, and pesticides to waterways. Consequences of cropland erosion include not only transport and removal of fertile topsoil from production, but also detrimental environmental effects such as accelerated eutrophication and sedimentation of surface waters, destruction of fish and wildlife habitat, and decreased recreational and aesthetic value of surface waters.

Water Quality Management in the Basin

The Department of Environmental Quality is responsible for assessing the condition of the state's water bodies, and for identifying waters which are limited in use by pollution. The Department has determined that the Tualatin River is "water quality limited" during the summer and fall months when flows are quite low, due to excessive amounts of ammonia nitrogen and phosphorus.

As a consequence of the Tualatin's designation as "water quality limited", the Department of Environmental Quality has set total maximum daily loads for the polluting nutrients which must not be exceeded during the low flow period between May 1 and October 31 annually.

The Department of Environmental Quality's Total Maximum Daily Load Number 22M-02-004, in Appendix A, contains a detailed listing of phosphorus load allocations and waste load allocations for all agencies having point and nonpoint source pollution control responsibilities in the Tualatin Basin.

The loading capacity for total phosphorus in the Tualatin River has been based on the Department of Environmental Quality's goal of attaining a monthly median phosphorus concentration of 70 micrograms per liter (ug/l) at and downstream from Farmington, as measured during the low flow period from

May 1 through October 31 of each year. Net load allocations have been set based on attaining measured concentrations of total phosphorus at specific locations, ranging from 20 ug/l in the upper section of the watershed at Cherry Grove, to 70 ug/l at and downstream from Farmington. Scoggins Creek, Gales Creek, and Dairy Creek have been assigned monthly median concentrations of 60, 45 and 45 ug/l respectively. No load allocations for ammonia nitrogen have been set. The Department considers the sources of excessive ammonia nitrogen to be the sewage treatment plants, and has set waste load allocations for those point sources.

Water Quality Monitoring in the Basin

Discussion of the impact of P on surface water quality is complicated. The complex chemistry of P and the various reactions it may undergo affect the forms and availability of P contributions to surface waters.

Dissolved P concentrations are determined in most studies. Generally, dissolved P is considered most available for plant uptake and can have an immediate impact on aquatic vegetation and algal growth.

Particulate P (PP) is P predominantly associated with sediment and organic matter contained in the runoff. The major form of P entering surface waters in agricultural watersheds is usually PP. PP includes both organic and inorganic P, and PP represents a major reservoir of P to aquatic vegetation and algae. Although not immediately available, portions of PP may come into solution over time, especially as dissolved P levels are depleted. Some researchers have estimated that 20 to 40 percent of sediment inorganic P is potentially available.

Total P (TP) is the total amount of P contained in the runoff suspension (dissolved P and PP).

More recently, P levels have been reported as algal available P (AAP). This measurement reports the amount of dissolved P and the portion of P capable of coming into solution from PP.

Water quality monitoring by the Department of Environmental Quality, the U.S. Geological Survey, and cooperating Designated Management Agencies conducted during the past several years indicates that concentrations of total phosphorus in the Tualatin River and many of its tributaries generally equal or exceed the target monthly median concentrations. In some cases the exceedance is substantial.

The total phosphorus concentration observed by the U.S. Geological Survey in 1986 at the West Linn gauging station ranged from 200 to 260 ug/l. Data from 1989 and 1990 show that monthly mean concentrations of phosphorus in the Tualatin at Weiss Bridge were 250 and 233 ug/l, respectively. In all cases, this is in excess of the targeted 70 ug/l concentration which has been used in modelling for calculation of load allocations for the responsible nonpoint agencies.

Recent water quality monitoring has shown mixed and variable results for subbasins. For 1989 and 1990, results indicate that tributaries in agricultural areas which are showing concentrations of phosphorus

significantly higher than identified target loading capacities include Carpenter Creek, Council Creek, Dairy Creek, and McKay Creek.

Monitoring data from 1989 and 1990 also show that concentrations of total phosphorus in waters in the upper reaches of the Tualatin and the upper reaches of several tributaries are quite high, on the order of 50 to 90 ug/l, in excess of the target loading capacities in these areas of the basin.

While concentrations of phosphorus in the basin's waters are generally high relative to target concentrations, lack of streamflow data at sampling points along tributaries in agricultural areas does not allow for calculation of agriculture's current exceedance of the load allocations which are to be met by June 30, 1993.

The Phosphorus Cycle and Phosphorus Use in Agriculture

The majority of soil P is located in the topsoil as a complex mixture of both mineral and organic materials that vary greatly in solubility. Phosphorus transported below the root zone is readily absorbed by the soil or is "fixed" by the conversion process that occurs in the soil when soluble P fertilizer materials are changed to less plant-available forms. Most P remains in the soil where the fixation occurs. The solubility of P is controlled by the concentrations of calcium (Ca), iron (Fe), aluminum (Al), and manganese (Mn) in the soil solution and by the nature and amount of soil minerals. Phosphorus is strongly absorbed onto the surfaces of these elements. Phosphorus is also strongly absorbed onto surfaces of Fe, Al, and Mn oxides and hydroxides, Ca carbonates, and some clay minerals.

Organic forms of P can be converted to available inorganic forms of P by mineralization during the decomposition of organic matter. Similar to the mineralization of organic nitrogen, organic P is released more rapidly in warm, well-aerated soils.

Phosphorus is an essential plant nutrient. It is a component of many organic compounds in plants and supplies energy needed to drive biochemical reactions in plants. For optimum growth, plants require ample amounts of available P from the soil. In most agricultural systems, this is possible only through nutrient additions to replace nutrients that prior crops have removed.

Phosphorus may be added to the soil through the addition of fertilizers, animal wastes, crop residues or municipal and industrial wastes. Removal of P from the soil can occur through plant uptake, crop removal, surface runoff of soluble P, and erosion of sediment associated P. **Runoff and sediment losses of P from the cycle are the main concerns in surface water quality protection.**

The most common sources of nutrient inputs to improve and maintain soil fertility include commercial fertilizers, animal manures, and waste materials.

Fertilizer

The principal forms of P fertilizer available in Oregon are "ammoniated phosphates", produced by ammonia treatment of mined rock phosphate. These ammoniated phosphates are routinely available in grades supplying 20 or 52 percent P_2O_5 . In addition to these P fertilizers, several types of superphosphates are available, providing 18 or 44 percent P_2O_5 .

Manure

Nutrients from animal manures are a resource available to landowners involved in livestock operations. Manure can contribute significant amounts of P to the soil and result in a decreased need for commercial fertilizer. To prevent over-fertilization, nutrient contributions from manure need to be credited when accounting for total crop needs. Considered with other factors, nutrient crediting can increase fertilizer efficiency and reduce threats to surface waters.

Waste materials

Nutrients from sewage treatment plant sludge and recycled wastewater are another source of fertility inputs for crop producers. Sludge can contribute nutrients and organic matter to soils, while recycled wastewater can be a dilute source of nutrients, including P. Considered with other management factors, nutrient crediting for use of these materials can increase fertilizer use efficiency and reduce threats to surface waters.

Identification of Potential Pollution Sources

Stream and lake bottoms release P over time in a natural process that occurs regardless of land-use activities. However, water quality has been shown to deteriorate as land is changed from its original state to more intensive uses, and nutrient additions to surface waters are often associated with the activities of man. Of these activities, agriculture is a concern because runoff and erosion from fertile cropland can be a major contributor of nutrients to surface waters.

Runoff and soil erosion from agricultural lands can be major causes of nonpoint source pollution. Surface runoff and eroded sediment can carry a wide range of materials from numerous sources into water bodies.

Land enriched with P and other nutrients in order to increase soil fertility can add significantly greater amounts of nutrients to runoff and eroded sediment than land in less intensive uses. Erosion of fertile soils often contributes to P enrichment of runoff and sediment and subsequently, enrichment of surface water bodies. Losses of P due to runoff and erosion from agricultural lands have been shown to increase with P fertilizer application rates and high soil P levels. Accelerated water quality degradation may result if agricultural runoff and soil loss are not controlled.

Livestock containment areas such as holding areas and feedlots have also been shown to contribute considerable amounts of P and other nutrients to surface waters. The significance of these contributions can be quite

substantial depending on volumes of runoff flowing through the containment area and its proximity to surface water bodies.

Additional factors affecting the loading of P to surface waters include size of the drainage area, proximity to water bodies, topography, depression storage, and intensity and duration of storm events.

Highly susceptible sites

All agricultural cropland has the potential for contributing nutrients to surface waters; however, some sites are more likely to contribute significant amounts than others. These "critical" areas need to be of top priority when implementing Best Management Practices to reduce nutrient contributions to surface waters.

Phosphorus has the tendency to adsorb onto soil particles and convert to relatively insoluble forms shortly after application, and it is commonly transported to waterways in association with sediment. Erodible cropland enriched with nutrient inputs has a higher probability of degrading surface water quality due to P content and higher runoff and soil losses from the site. Typically, highly erodible cropland is of medium texture and located on steep slopes.

National watershed studies suggest that in strictly agricultural watersheds, the highest loadings of P can arise from confined livestock holding areas. Depending on management practices and facilities, holding areas near surface waters can contribute the bulk of P loadings within watersheds. The total P load from holding areas has been shown to be approximately ten times higher than that from the other agricultural land uses.

The soluble P fraction of feedlot or holding area runoff is high and has potential for immediate effects on water quality. The control of barnyard runoff is often of critical importance in controlling the magnitude of nutrient loadings into a waterbody.

Agricultural operations under intense irrigation and fertility management have a high potential to contribute P in solution and in association with sediment. Irrigation water management, fertility management, and erosion control are of great importance in reducing the risk of nutrient transport.

Potential Pollution Sources in the Tualatin Basin

Numerous sources have the potential to contribute P to surface waters of the Tualatin Basin. Although potential pollution of the river is very small per acre of agriculture, the predominance of area within the watershed devoted to agriculture makes the potential impact significant.

The Washington County Soil and Water Conservation District has held public forums to solicit the water quality related concerns of Washington County residents. Concerned citizens identified numerous situations and conditions in rural areas of the basin which have nonpoint source effects on water quality. Subsequently, advisory committees made up of volunteers from the community, and agency personnel were formed to assist the district to formulate and carry out its plan to address the water quality issue.

In addition, a coordinating committee for agriculture was created in August 1990, to guide and direct implementation of the water quality effort, to identify site-specific areas of need, to help identify landowners needing technical assistance, and to involve a wide variety and size of agricultural operations.

Phosphorus loading of the Tualatin Basin's waters from agricultural areas can come from one of two sources: in solution in runoff from agricultural lands, or adsorbed onto soil particles and carried in association with eroded sediment. In turn, potential contributions of phosphorus from either source can come from a variety of existing practices and processes. While there may not be severe impact on water quality from a single agricultural source or activity, the combined effects from all sources may contribute, along with impacts from other land uses and activities, to the impairment of beneficial uses of the Tualatin's waters.

Quantitative evaluations of P contributions to surface waters due to agricultural activity are not easy to obtain. Complications arise due to inherent variability of the runoff process, climate, land-use, topography and geology.

It is not feasible at the present time to attempt to quantify the current amounts of phosphorus entering the Tualatin Basin's waters from each of the various potential sources outlined in this section. Estimates will come forward as this plan is developed and the impact from each of the various potential sources is assessed.

Agricultural runoff

Generally, runoff can transport nutrients, sediment, and other pollutants, potentially affecting water quality downstream. While the transport of phosphorus is often in direct association with the transport of sediment (due to the tendency of phosphorus to adsorb onto soil particles), it can also be transported in solution. Runoff from agricultural operations can come from general, as well as specific sources. Specific potential sources for which runoff control programs currently exist include Confined Animal Feeding Operations and container nursery operations.

Confined Animal Feeding Operations

It is generally accepted that the most significant water pollutants from animal waste discharges to streams are coliform bacteria, nutrients (including phosphorus), and in certain cases, biochemical oxygen demand. Fecal coliform is a bacterial group used as a microbiological indicator organism for the presence of certain types of pollution.

Certain conditions caused by Confined Animal Feeding Operations (CAFOs) in the county were shown in a study by the Washington County Soil and Water Conservation District in 1983 to be potential water quality concerns. A significant number of facilities have potential problems, and additional Best Management Practices (BMPs) are needed to prevent water quality problems from occurring. Water quality data from 1970-1980 for fecal bacteria, and an inventory of Confined Animal Feeding Operations suggests that Dairy Creek may have a water quality problem related to livestock.

The location of Confined Animal Feeding Operations in relation to streams and drainage ditches is an important factor in identifying potential water quality problems resulting from discharges of manure-contaminated water. The amount of barnyard and feedlot P loading is related to the distance between the waterbody and the barnyard. Impacts are greatest the closer a barnyard, feeding area, or manure application site is to a waterbody. The larger the distance, the greater the opportunity for suspended contaminants to settle out of the runoff prior to entering a waterbody. In the Tualatin Basin, it is estimated that as many as 20 or more operations are located less than 1,000 feet from a waterway.

Appropriate manure storage facilities for the size of the operation is another important factor. If storage is insufficient to hold quantities of manure produced during periods of wet weather, manure application during rainy weather is necessary, and extreme care is required to prevent field runoff. The proper balance of manure storage capacity and suitable land for application is also necessary to prevent water pollution. If insufficient suitable land is available for the amount of manure produced by the livestock, application site accumulation of nutrients and runoff can result.

It is estimated that there are forty-five to 50 dairies, totaling 6,000 cows, and fifteen to 20 swine production facilities with approximately 10,000 hogs in the basin. Operations are scattered, though there are concentrations in the Dairy Creek subbasin, and on the south side of the Tualatin River. Less concentrated areas include Gales Creek and the Lower Tualatin River. There is a large number of horses in the county, and while most of the population is dispersed, several moderate sized operations are known to exist. Poultry, sheep, and cattle production is limited in the county. Many farm animals are not held in confinement, and these are not included in the above totals.

Under current regulations, owners of Confined Animal Feeding Operations are required to have a permit for operation of wastewater facilities.

It is estimated that over the past four years (including estimates for 1990), \$180,000 worth of improvements have been made on six CAFO operations, resulting in improved water quality and more efficient handling of waste and wastewater from CAFOs in Washington County. These estimates include only those improvements on which cost-shared dollars were available through the federal Agriculture Conservation Program, and do not include improvements made with only operator-provided dollars.

This leaves an estimate of as many as forty operations which either have had runoff problems addressed by landowners on their own initiative, or which may need upgraded facilities. Current cost-share programs have been addressing the needs on two facilities per year, leaving approximately as many as thirty-six CAFO operations that may require an accelerated effort to address water quality issues as a part of the agricultural nonpoint source control efforts in the basin.

Dairy Creek may deserve priority attention for improving existing animal waste management practices due to some concentration of CAFOs and the characteristic of this subwatershed that ninety percent of the farmed land

lies within one-half mile of a stream. However, equal consideration should be given to all CAFO facilities in the county, regardless of watershed location.

As Confined Animal Feeding Operations needing improved waste management and utilization systems are located, identified, and prioritized, information on the contribution by these facilities to phosphorus loading of the basin's waters will become available.

Container nurseries

It is estimated that container nurseries total approximately 1500 acres in Washington County. A mixture of very small to very large operations are scattered throughout the basin.

Containerized operations are intensively managed. Container farms grow all stock in 8"-36" plastic pots which are placed on graded, gravelled beds, often engineered to limit water infiltration. Irrigation is common from April through October, and irrigation water application rates are high compared to other crops. The combination of limited surface permeability and high irrigation rates can lead to significant runoff. With intensive fertilizer application and pesticide use, runoff has the potential to contribute nutrients and pesticides to receiving waters.

Currently, runoff problems are being addressed on a voluntary basis by the initiative of operators through the adoption of management practices to minimize the amount of discharge water from operations, and practices such as the timely and appropriate application of fertilizers and pesticides.

In addition, the Container Nursery Irrigation Water Management Plan (in Appendix B) has been approved for statewide implementation by the Environmental Quality Commission. The overall objective of this plan is to prevent discharges from container nurseries during the irrigation season of May 1 through October 31.

At this time, it is unknown what portion of the container operations currently are meeting the Container Nursery Irrigation Water Management Plan requirement of no discharge during the irrigation season, what portion will achieve no discharge by the specified date of June 1, 1993, and what portion will need to be permitted for discharge by the Department of Environmental Quality by the specified compliance date of June 1, 1993.

The number of farms needing improvements and the phosphorus contribution from this source is unknown at the present time. This information will become available as the Container Nursery Irrigation Water Management Plan is implemented, and the schedules outlined within the plan are being met.

Sewage treatment plant sludge and recycled wastewater

Land application of sewage treatment plant sludge has been practiced in the Tualatin Basin for some time. Unified Sewerage Agency of Washington County has provided sludge from its Rock Creek, Hillsboro, and Forest Grove facilities for use on agricultural land for several years. Application of wet sludge is generally made by big gun sprinkler, though one treatment plant produces a dewatered cake which is spread with conventional manure

handling equipment. Unified Sewerage Agency, in cooperation with farm operators, chooses sites for application and maintains records of locations, amounts, and chemical loading on all sites. Annual loading rates for individual fields are chosen based on the agronomic need for nitrogen by the crop. A total of 3,700 dry tons of sludge was applied in 1988.

Potential benefits from the use of sludge relate to its nitrogen, phosphorus, and organic matter content. Potential problems relate to the presence of heavy metals. According to Unified Sewerage Agency's feasibility assessment, compared to published average values, nutrient content of its sludge is high, while concentrations of heavy metals are low. Demand for sludge generally exceeds supply.

Unified Sewerage Agency has also been involved in the land application of sewage treatment plant recycled wastewater on ornamentals, turf, pasture, and grassland. A total of 808 million gallons of recycled wastewater was land applied to 1,065 acres in 1988. Application rates are generally chosen based on the irrigation needs of the crop or vegetation. Recycled wastewater irrigation management plans have been prepared for some of the sites. Unified Sewerage Agency regularly monitors effluent characteristics at sewage treatment plants which provide this material for use at land application sites.

There is a potential for increased application of these materials to agricultural land in the near future. Unified Sewerage Agency would like to make more of their facilities' treated effluent water available for agricultural land application to assist in the Agency's program to reduce phosphorus discharges to the Tualatin's waters. It is estimated that 10,000 to 15,000 acres would be required to accept all of Unified Sewerage Agency's recycled wastewater from May through September. There is agricultural land available, Unified Sewerage Agency's effluent has generally good characteristics for agricultural reuse, and new rules recently adopted by the Department of Environmental Quality outline specific requirements for reuse. Unified Sewerage Agency is currently working on a Reuse Master Plan, to be completed by June 1991, outlining how recycled wastewater might be used in land application.

Potential benefits from the use of recycled wastewater relate to its phosphorus value, and through the availability of water for irrigation in portions of the basin. If not for recycling of treated wastewater, it would ultimately be discharged to the Tualatin. Potential problems relate to the presence of heavy metals and fecal coliform bacteria. According to the feasibility assessment, compared to published average values, levels of heavy metals in Unified Sewerage Agency's wastewater are low, and depending on level of treatment available at each of its treatment plants, levels of fecal coliform bacteria can also be very low.

The land application of sewage sludge and recycled wastewater from sewage treatment plants presents special management concerns. Potential problems can arise from the misapplication of either of these materials, resulting in runoff and reduced water quality. Examples of problems which can arise include improper application rate for the crop being grown, application of materials to wet soils, and insufficient soil incorporation.

Care must be exercised in the use and particularly the increased use of both sludge and treated effluent. With appropriate irrigation management plans, proper application rates and methods, appropriate crop choice, and monitoring of sites, sludge and recycled wastewater can be utilized on agricultural land without discharge of phosphorus and other pollutants to the waters of the basin.

Proper application rates must be based on nutrient levels in the material being applied, presence of heavy metals, moisture level, soil capability and nutrient levels, crop to be grown, slope, etc. Proper application methods must include Best Management Practices which are compatible with each farming operation.

The total current contribution of land applied sludge and recycled wastewater to phosphorus loading in the basin is not known. As increased acreage is utilized for sludge application and recycled wastewater irrigation, potential runoff problems can be avoided through the adoption of Best Management Practices and procedures outlined in the Control Strategies section, Chapter IV.

General agricultural runoff

In addition to the specific potential runoff problems addressed above, the agricultural and rural residential acreage in the basin has potential for contributing pollutants to the basin's waters. Runoff can occur due to heavy rainfall, lack of drainage, soil compaction, over-application of irrigation water, and other site-specific conditions. Failing septic systems can be a problem in rural areas, and this source can contribute pollutants to both surface and groundwater.

The total amount of phosphorus contained in runoff from general agricultural and rural residential lands is unknown at this time, and will be very difficult to quantify, except on a site-by-site basis as specific contributing sources are identified.

Soil erosion

Soil erosion is a selective process with respect to particle size, favoring fine particles and organic matter. The greater surface area of these fine soil particles and organic matter allows relatively high levels of nutrients to be adsorbed, and these nutrients are transported with sediment in the erosion process. The result is usually eroded sediment richer in P than the surface soil. The degree of sediment-P enrichment is commonly two to six times that of soil P levels.

Table 3 summarizes several categories of erosive soils in the county, and lists related acreages for each category. Each category is referred to in greater detail in this section.

Table 3 Summary of erosive soil categories in Washington County

<u>Category</u>	<u>Acres</u>
Total erosive soils in the county	153,124
Cropland acres needing protection outside of UGB	85,000
Cropland acres with the potential to erode at more than 8 times tolerable soil loss *	11,200

* Classified under the 1985 Food Security Act as Highly Erodible Lands

Note: In the above table, each successive category is a subset of the previous category.

It is estimated that there are a total of 153,124 acres of erosive soils throughout the county. This total includes all erosive soils in the urban, forestry, and agricultural land use areas. The classification of these soils is shown in Table 4.

Table 4 Classification of erosive soils in Washington County

II e -	68,700 acres
II w -	2,510 acres (Cascade Silt Loam - 3 to 7% slope)
III e -	56,334 acres
III w -	1,124 acres (Cornelius Silt Loam variant - 3 to 7% slope)
IV e -	22,900 acres
IV w -	<u>1,556</u> acres (Delena Silt Loam - 3 to 12% slope)
	153,124 acres

The soils in capability class "w" are highly erosive because of high water tables that perch on a cemented subsoil which does not allow water to infiltrate very rapidly, thus creating increased surface runoff.

The details of the contribution by eroded sediment to phosphorus loading of the Tualatin Basin's waters is unclear at the present time. Questions exist about how much of the phosphorus in the basin's waters is from natural sources, especially from soils in the basin that exhibit andic soil properties. There are further technical questions about the phosphorus retention value of soils in the basin, and the soils' abilities to adsorb and desorb phosphorus in the water column.

Basic soil chemical, physical, and mineralogical data provided by a soils study discussed in the Control Strategies section of this plan will help to answer these questions, and will help to lend perspective on what response might be seen in basin water phosphorus levels as a direct result of erosion reduction. Until this type of information becomes available, it is not possible to come up with reliable, defensible estimates of the impact of erosion on instream phosphorus levels.

Sedimentary erosion can occur through several processes, including upland erosion, streambank erosion, and roadside erosion. Generally, a portion of the total soil eroded from uplands and roadsides makes its way to surface waters, while a much larger portion of the sediment from streambank erosion enters nearby surface waters.

Upland erosion

According to the Soil Conservation Service Conservation Needs Inventory, it is estimated that the figure for total erosive soils in the county includes approximately 85,000 acres of cropland located outside of the Urban Growth Boundary which need erosion protection treatment.

Potential for erosion from each of a variety of crops and situations is categorized below.

Grain: While significant gains in erosion control have been made, there is a need for conservation tillage adoption, and research needs to be continued on planters, residue management, fertilization, pest control, and planting dates.

Hay/silage: Generally, acreage in this use is well protected.

Grass & legume seed: Sediment contribution from this source is considered low to medium, primarily due to limited cover and low residue.

Field crops & vegetables: Soil erosion from row crops and vegetables is generally rated medium, due to inadequate winter cover, and flooding in certain areas.

Tree fruits & nuts: Orchard erosion is significant on slopes of greater than 7% in the first two establishment years. Permanent cover is fairly extensive, but not all growers have adopted this practice. If orchards are overworked, existing cover tends to be degraded, and may need to be re-established. Cover in most filberts cannot be grown beyond ten years due to lack of sunlight. Runoff from orchards onto adjacent lands can become a problem as a result of soil compaction in established orchards.

Small fruits and berries: About 11% of the acreage is on slopes over 5% and experiences at least moderate erosion problems. Erosion can be severe on vineyards because crops are grown up and down slopes with little cover and runoff control.

Nurseries: Soil erosion from nursery stock acreage is a very serious problem on slopes of 3 to 20 percent. Most nurseries are not cover cropping. There is also irrigation erosion on steep slopes.

Christmas trees: Soil erosion is the most severe problem in the first two or three establishment years. Generally, all competing vegetation is sprayed out because of moisture competition, rodents, and problems with marketing trees due to the presence of grass in the lower limbs.

In the basin, the Dairy and McKay subwatersheds produce the highest annual loads of sediment delivered from uplands. There are approximately 45,000

acres of cropland in these subwatersheds that have the potential to erode at three times tolerable soil loss or greater. These acres represent 70 percent of the total cropland acreage in these subwatersheds.

Slightly more than 11,200 acres in the county are classified as Highly Erodible Lands under the federal 1985 Food Security Act. As a general rule, these soils have the potential to erode at eight times tolerable soil loss or greater. These lands qualify for special erosion protection programs available under the Act. These erosion control programs are discussed further in the Control Strategies section in Chapter IV.

Other federal cost-share programs have been addressing a portion of the erosion problems in the county. Over the last three years, \$180,000 worth of erosion control practices were installed on agricultural lands in the county on 56 participating farms, resulting in significant erosion control.

Streambank erosion

Streambank erosion can occur as a result of conditions distant from the actual site of erosion, and can also result from a variety of conditions and practices occurring on acreage adjacent to the site. Hydrologic characteristics and events removed from the eroding site can have great influence on the nature and extent of streambank erosion at any given site. These can include turbidity and surges of water from upstream releases or storm events. At specific sites, agricultural practices such as livestock access to streams and the removal of riparian zone vegetation can contribute to erosion, along with other land use practices.

The highest amount of delivered sediment per stream mile in the basin occurs in the upper Tualatin watershed. An early study indicated that approximately five to seven miles of the mainstem of the Tualatin River between Gaston and Cherry Grove had a serious streambank erosion problem. At the time of the study, it was estimated that erosion in this section was delivering approximately 38,000 tons of sediment per year to the river.

Gales Creek and the middle fork of Dairy Creek have severe streambank erosion in areas, and it is estimated that erosion from these areas contributes more than 5,000 tons of sediment annually to the affected waterways. The east and west forks of Dairy Creek experience moderate rates of sediment delivery per perennial stream mile. Due to hydrology, soils, and land use patterns, streambank erosion is a problem affecting many sections of many tributaries throughout the basin.

Along with determination of the local environmental and the upstream hydrologic parameters causing the erosion, the following site specific information is important in the assessment of the problem and the design of possible corrective measures at locations where streambank erosion is occurring:

- 1) length of trampled or eroding bank
- 2) vertical height
- 3) estimated annual rate of recession
- 4) adjacent land uses
- 5) potential management measures

Roadside erosion

There are approximately 1200 miles of county roads in the rural areas of Washington County. Authority for roadside erosion control rests with the county. A study conducted by the Soil Conservation Service in 1981 identified and mapped roadside erosion and sedimentation problem areas.

Roadside erosion generally presents itself as a problem of scouring of the ditch by running water, the sloughing off of soil on unstable upper side slopes of ditch banks, or sedimentation in the ditch, resulting in reduced water conveyance. This type of erosion tends to be most pronounced where topography changes from flat or gentle to steeper grades.

Since roads do not follow contour lines, when constructed, they intercept natural drainage patterns and become interceptor ditches. The concentration of water within these "interceptor" ditches is the main cause of roadside erosion. Roads generally follow property or legal survey lines, and changes in soil conditions do not respect these lines. Often, design and construction of roads in the past has not considered the special inherent soil problems that would promote instability and result in roadside erosion.

Many rights of way are narrow, preventing the design and maintenance of roadside ditches that are erosion resistant. Roadside maintenance practices such as the clean scraping of ditches can leave the soil open and vulnerable to erosion.

IV. CONTROL STRATEGIES

Goals

It is the goal of the Soil and Water Conservation District to reduce or eliminate all excessive nonpoint source phosphorous pollution of the Tualatin River from the rural areas. The goal will be attained through implementation of this planning document. Reaching this goal will contribute, along with the urban and forestry components, to the restoration of the waters of the basin to a level of quality that will protect and preserve their beneficial uses.

Attaining compliance with the total maximum daily load requirement may prove to be very challenging, particularly in the short-term. This plan concentrates on efforts to alleviate those sources of phosphorus from agricultural lands which are felt to be having the greatest potential impact on phosphorus loading of the basin's waters, employing cost-effective means to control readily identifiable sources on a priority basis.

The Soil and Water Conservation District's intent in its broadest terms is to create a high level of understanding and appreciation for water quality issues among the basin's citizenry, to control pollution as close to its source as possible, and to base actions on sound conservation planning.

The achievement of these goals will require a multi-faceted program of water quality activities in the Tualatin Basin. First, actions taken to reduce nonpoint source pollution should be voluntary, and based on the best available technical and management information. The Soil and Water Conservation Districts have been highly effective with volunteer conservation programs in the past and are confident that the same philosophy will result in the widespread acceptance of this initiative.

Second, the nonpoint source program will be coordinated by the Soil and Water Conservation Districts acting as the Local Management Agencies, using this plan as a guide, and utilizing the U.S.D.A. Soil Conservation Service, the U.S.D.A. Agricultural Stabilization and Conservation Service, the Oregon State University Extension Service, the Oregon Department of Agriculture, and the Oregon Department of Environmental Quality for technical, financial, informational, and educational assistance.

Finally, the Soil and Water Conservation Districts will incorporate broad based nonpoint source pollution control planning into regular technical assistance programs.

Objectives

- * OBJECTIVE 1: Implement the approved Dairy-McKay Hydrologic Unit Area (HUA) Proposal
- * OBJECTIVE 2: Verify compliance of CAFO operations with provisions of the existing permitting process

- * OBJECTIVE 3: Verify container nursery compliance with provisions of the approved Container Nursery Irrigation Water Management Plan
- * OBJECTIVE 4: Promote sound irrigation water management and assure no loss of nutrients from land applied sewage treatment plant sludge and recycled wastewater
- * OBJECTIVE 5: Prioritize subbasins outside of Dairy-McKay Hydrologic Unit Area for treatment based on exceedance of assigned load allocations for phosphorus
- * OBJECTIVE 6: Identify and prioritize significant phosphorus contributing agricultural nonpoint sources of water pollution from cropland erosion in the prioritized subbasins outside of Dairy-McKay Hydrologic Unit Area
- * OBJECTIVE 7: Identify and prioritize significant phosphorus contributing agricultural nonpoint sources of water pollution from streambank erosion in the prioritized subbasins outside of Dairy-McKay Hydrologic Unit Area
- * OBJECTIVE 8: Establish upland erosion control demonstration sites on basin-representative crops and soils which are especially susceptible to erosion to publicize installation, demonstrate effectiveness, and promote adoption of erosion control measures
- * OBJECTIVE 9: Promote the adoption of Best Management Practices and Best Management Systems for erosion control on prioritized cropland outside of Dairy-McKay Hydrologic Unit Area
- * OBJECTIVE 10: Establish a streambank erosion control demonstration area at a site representative of others in the basin to publicize installation of Best Management Practices, demonstrate their effectiveness, and promote their adoption
- * OBJECTIVE 11: Promote the adoption of cost effective Best Management Practices for protection of prioritized sites of streambank erosion outside of Dairy-McKay Hydrologic Unit Area
- * OBJECTIVE 12: Promote Recommended Practices for Phosphorus Management to Protect Water Quality through a coordinated information and education campaign

Strategies for Controlling Nonpoint Source Pollution

Sound farm management practices to reduce threats to surface water quality exist. Agricultural management practices for preserving surface water quality deal with accurate assessment of crop nutrient and water requirements and proper application of nutrient and water inputs to cropland. A most important practice is the control of surface runoff and erosion from agricultural fields, intensive production areas, barnyards, and feedlots, through the implementation of sound conservation and management practices.

Appropriate management practices for individual farms will vary with the specific cropping, topographical, environmental, and economic conditions existing at a given site. Due to these variables, it is nearly impossible to recommend any best management practices for Tualatin Basin farms as a whole.

Water quality management practices must be tailored to the unique conditions of individual farms. A number of proven management practices for protecting and preserving surface water quality are described in Section II, Chapter I.: Best Management Practices and Best Management Systems.

The Soil and Water Conservation Districts will assist the basin's agricultural operators and communities in controlling nonpoint source pollution. The strategy to reduce amounts of polluting substances lies in reducing runoff and erosion through a combination of land treatment, land use change, structural measures, and educational programs.

In general, the district will concentrate on accelerating ongoing activities in runoff control through existing programs, and encouraging the adoption of technology transfer, low capital cost Best Management Practices aimed at runoff reduction basinwide through educational programs, while concentrating structural and higher capital cost efforts aimed at erosion control as planned in the Dairy-McKay Hydrologic Unit Area proposal, using implementation efforts in this area as a model for future efforts throughout the Tualatin Basin. Other subbasins will be prioritized for treatment based upon results of monitoring efforts in the agricultural areas, contingent on funding. Monitoring of stream systems will be used to identify areas where excessive phosphorus loading is occurring.

The Soil and Water Conservation District intends to inventory the natural resource and cultural features of the basin using a Geographic Information System. Combining these features with monitoring information will provide the basis for prioritization of nonpoint source pollution problem areas and the identification of potential contributing factors.

Several opportunities exist for access of the Geographic Information System through a shared use facility. Unified Sewerage Agency and the Oregon Department of Geology currently have Geographic Information System capability. The Washington County Soil and Water Conservation District will proceed to develop a working agreement which will provide this capability either as a cooperative arrangement or by cost-reimbursable support from one of these existing programs.

Efficient use of phosphorus inputs

Educational efforts to promote efficient use of P inputs will focus on Recommended Practices for Phosphorus Management to Protect Water Quality, as outlined in Section II, Chapter I.

Runoff reduction

Efforts toward the goal of reducing runoff from agricultural operations will concentrate on acceleration of existing programs, and on education and technical assistance aimed at adoption of the Best Management Practices listed in Section II, Chapter I.

Confined Animal Feeding Operations

Current programs are addressing some of the needs, but an accelerated program would shorten the time necessary to achieve further water quality results.

At the present time, problems associated with discharge of livestock waste to waterways is addressed in several ways. The first is on the voluntary initiative of CAFO operators. A survey by the Washington County Soil and Water Conservation District in 1983 found that operators were generally aware of the potential water quality problems at their own facilities. At that time, it was estimated that 30% of the owners of facilities planned to apply additional Best Management Practices within the next five years.

The second is through an existing program administered through a Memorandum of Agreement between the Oregon Department of Agriculture and the Department of Environmental Quality. This program generally operates on a complaint basis, whereby the complainant contacts the Oregon Department of Agriculture with a concern, and the Department does an initial investigation to assess the validity of the complaint. If it is determined to be a valid complaint, the Department does the necessary followup work, including water sampling, photo documentation, and review of the operator's voluntary plans to alleviate any runoff problems. If a voluntary agreement and schedule cannot be reached, a stipulated consent order is entered into between the operator and the Department of Environmental Quality. The consent order outlines the tasks and timelines necessary to meet water quality objectives. The Department of Environmental Quality may take further enforcement action, through the assessment of civil penalties.

The existing CAFO program implementation efforts will continue, and the Soil and Water Conservation District will undertake an accelerated effort in inventory, education, and technical assistance in implementation of Best Management Practices and Best Management Systems on CAFO facilities needing improvements to abate pollution. The district will encourage operators to use Best Management Practices that prevent water pollution from animal waste discharges. The district, based on the advice of the Soil Conservation Service and in consultation with the individual owners, will recommend the management practices that best suit the needs of each particular facility.

Barnyard runoff control systems and manure management plans will be the principal control practices used. Land application of manure will be evaluated, and Best Management Practices will be recommended to prevent runoff. Practices will consider the rate of manure application for fertilization value, and will take into account soil infiltration rates, tile needs, and times of year that manure can best be applied.

Manure storage facilities will be designed and constructed as necessary to restrict spreading to suitable agricultural land. The district will provide technical assistance with the formulation of waste management systems and waste management plans, cost-share information, and review of plans for new and modified facilities.

Facilities planning will be considered in the context of Best Management Systems. Improvements in water quality which have been realized from CAFO

improvements adopted and installed in the recent past can be built upon by addressing current runoff problems from CAFOs through the further adoption of water quality Best Management Practices and installation of wastewater handling facilities.

Container nurseries

The Container Nursery Irrigation Water Management Plan (see Appendix B) has been approved for statewide implementation by the Environmental Quality Commission. Container nursery operations have set time schedules to meet the requirement of no contaminated discharge during the irrigation season of May 1 through October 31. If irrigation season discharges will occur after the compliance date of June 1, 1993, then a Water Pollution Control Facilities Permit will be required from the Department of Environmental Quality. The objective of this plan is to prevent discharge of irrigation water during the irrigation season.

The strategies in the Container Nursery Irrigation Water Management Plan address potential problems of runoff from container nursery operations, preventing discharges from these operations during the irrigation season. Best Management Practices to meet objectives in the plan will be evaluated on individual farms, and will be incorporated into Best Management Systems. Best Management Practices will be oriented toward efficient use of irrigation water and recycling or reuse of irrigation tailwater.

The Oregon Department of Agriculture will have responsibility for review and approval of individual container nursery Water Management Plans. The district may assist in providing technical assistance to operators. The extent of the Soil and Water Conservation District's ability to participate in this process depends in part on the eligibility of container nurseries for federal cost-sharing under the Agriculture Conservation Program. The Department and district will continue to encourage the amendment of federal Agriculture Conservation Program procedures to include eligibility for container nurseries.

Sewage treatment plant sludge and recycled wastewater

The Washington County Soil and Water Conservation District will be involved in the review of current contracts and future applications for use of sewage sludge and recycled wastewater on agricultural and rural lands in the county. Current contracts will be reviewed by the district and evaluated for acceptability of the site and the appropriateness of rates and conditions of application. Future contract applications will be reviewed by the district for site acceptability, and based on that review, the district will recommend whether the site should be approved. If approval is recommended, rates and conditions of application will be suggested.

The Soil and Water Conservation District will assist contracted users with the development of individual farm plans, to assure that preventive measures are taken to avoid the discharge of nutrients, sediment, and pollutants to the Basin's waters, and that overall conservation practices and Best Management Practices are being employed. Best Management Practices may include soil conservation practices, nutrient and application rate management, choice of crop for efficient nutrient uptake, tillage management for incorporation of sludge, and irrigation water management practices.

Adoption of these strategies will result in the prevention of runoff from agricultural lands on which sewage treatment plant sludge and recycled wastewater are applied.

General agricultural runoff

The Soil and Water Conservation Districts will incorporate broad based nonpoint source pollution control planning into regular technical assistance programs, to minimize runoff and the potential discharge of phosphorus contained in runoff. To complement these efforts, the district will participate in the presentation of educational programs on Best Management Practices and encourage their adoption throughout the county on a variety of crops.

This will be accomplished through workshops with growers of specific crops, and through other educational efforts discussed in the chapter on Educational Activities in Section II. Types of practices to be included are Recommended Practices for Phosphorus Management for Water Quality, and those other nonstructural practices which can be most readily adopted basinwide, at low cost to operators. Some examples of such practices include nutrient management for efficient crop utilization, irrigation water management to avoid runoff, and waste utilization.

Erosion reduction

The potential impact on phosphorus loading of the basin's waters from sedimentary erosion is being addressed through a soils study conducted cooperatively by the Washington County Soil and Water Conservation District, the Oregon Graduate Institute, the Oregon State University Extension Service, and the Soil Conservation Service. Representative soils from various areas of agricultural and forest lands in the basin will be sampled and analyzed at the National Soil Science Laboratory in Lincoln, Nebraska, for an array of chemical, physical, and mineralogical properties.

The objectives of this study are to attempt to develop the relationship between phosphorus retention and/or availability and selected soil properties, and to assist in transferring this technology to other parts of the basin through field estimates. Information gained will be directly applied to assist in the prioritization of areas potentially contributing phosphorus to the basin's waters through sedimentary erosion.

Transfer of this information to other areas will be aided by ongoing digitizing of the county's soil survey. The soil survey has been funded for digitizing through an agreement with the Soil and Water Conservation District, the Metropolitan Service district, the Soil Conservation Service, and Unified Sewerage Agency, and is scheduled to be available in 1991.

Combined with information gained from the soils study, the digitized soil survey will aid in pinpointing where the highly erodible soils are, assessing potential sources of phosphorus, and helping to focus nonpoint source pollution control implementation activities on the class III and class IV land for phosphorus and sediment reduction.

Upland erosion

The federal Food Security Act of 1985 includes provisions for dealing with soil erosion from agricultural lands, and provides incentives for agricultural operators to comprehensively plan activities to properly treat their acreages and conserve soil and water resources. Vegetative cover is one of the most effective Best Management Practices for preventing or controlling sediment movement, and for controlling the transport of nutrients and pesticides in solution or absorbed onto the finer soil particles. The majority of practices which operators install under this program are designed to reduce erosion, which beneficially affects water quality. The adoption and installation of these conservation measures has been done voluntarily by individual land owners and operators. Coordination of agricultural nonpoint source pollution control activities with federal programs created under the Food Security Act will be critical to the success of agricultural nonpoint source pollution control implementation activities.

The Conservation Reserve Program within the Food Security Act offers financial incentives to farmers for voluntarily retiring highly erodible land from intense agricultural use. Producers who sign up agree to establish and maintain a soil-conserving cover on the land for at least 10 years. If land is returned to production before contract expiration or if the contract is terminated because of other contract violations, the participant must repay with interest all annual rental and cost-share payments. There are 11,200 acres in the county eligible for this program. Currently, enrollment is closed but another signup period may be initiated in 1991.

The Conservation Compliance provision of the Act requires owners of highly erodible cropland to have developed an erosion control plan by January 1, 1990 and have the plan installed by January 1, 1995 in order to remain eligible for U.S.D.A. benefits. Approved conservation plans must employ a set of soil erosion management practices that have been approved by the State Soil Conservation Service and the local Soil and Water Conservation District.

Additional incentives for erosion reduction are offered through the Food Security Act in the Sodbuster and Swampbuster provisions. These programs mandate the loss of U.S.D.A. program benefits for those farmers who convert highly erodible land or wetlands to crop production.

Other existing programs also encourage erosion reduction. The Agricultural Stabilization and Conservation Service has provided cost-sharing incentives for many years to accelerate the installation of such measures. These funds, through the Agriculture Conservation Program, are applicable to agricultural and forestry lands, have averaged \$60,000 per year over the past 3 years in Washington County, and are used on a site-by site or measure-by-measure basis. In addition to the above federal assistance programs, operators in the county have installed erosion control measures and practices on their own initiative.

Sediment delivery from uplands can be controlled at the source by reducing soil loss from the upland fields. However, there are limits as to how far rates of soil loss can be reduced while maintaining a viable agricultural land use. Tolerable soil loss rates for the purposes of maintaining long-

range productivity are available for various soils from the Soil Conservation Service.

Target reductions in sediment delivery rates on both rotated and continuous cropland can generally be achieved using a combination of practices. Additional practices on seriously eroding uplands may be necessary to achieve sediment delivery reduction targets. To manage existing gullies and prevent new ones from developing, grassed waterways, field diversions, and grade stabilization structures may be needed.

The first stage of erosion control efforts in the initial phases will be to address upland erosion problems in the Dairy-McKay Creek watershed, as outlined in the Hydrologic Unit Area plan.

The second stage will be to identify other subwatersheds on a priority basis for phosphorus contribution from sediment loading, and determination of reduction targets. Site-specific program implementation for the objective of phosphorus reduction through erosion control will be prioritized based on results from water quality monitoring, results of the soils study, the use of the digitized county soil survey, and the ranking of potential sediment contributing sources by site erodibility and crop type.

An approximation of upland erosion treatment needs has been made and is detailed in the chapter on costs in Section II. It is estimated that control efforts implemented on these acreages could result in a reduction of 30,000 to 35,000 tons of sediment entering the basin's waters.

In the Tualatin Basin, Soil and Water Conservation District and federal Soil Conservation Service staff are available to assist landowners in evaluating effective practices for reducing runoff and soil erosion on their farms. Personnel in these offices also design and assist with implementation of practices, and assist in identifying sources of cost-sharing funds for the construction and/or use of some of these practices.

Streambank erosion

Principal practices that will be needed include livestock exclusion, shaping and seeding of banks, placement of buffers, and riprap installation. Buffers may be used where streambank degradation results from intensive adjacent agricultural land uses such as livestock access or cropping too close to the stream. Design of buffers for pollution control depends on many factors, and appropriate buffer width is site-specific.

The Soil and Water Conservation District will, along with the streambank erosion control efforts outlined in the Dairy-McKay Creek Hydrologic Unit Area proposal, undertake a streambank erosion inventory and assessment of treatment needs in known areas of concern. These efforts will be carried out with the assistance of volunteer groups. Initial screening for known areas of concern will be supplemented through the use of available aerial photographs.

Sites for treatment will be prioritized by severity of erosion, upstream hydrology, expected degree of control, and control measure cost-effectiveness.

Roadside erosion

The Washington County Soil and Water Conservation District will cooperate with Unified Sewerage Agency and the Washington County Land Use and Transportation Department in the evaluation of roadside ditch maintenance procedures currently being employed, and will assist with development of Best Management Practices to reduce roadside erosion on both existing and planned facilities.

When road construction is planned, the district can provide soils information that would "red flag" any special soil problems that should be addressed in the design and construction phase.

Existing and new roads should have crossdrains installed at intervals that prevent the buildup of erosive flows within the roadside ditches. The district could assist with the determination of maximum allowable non-erosive stream sizes and velocities for all soils.

Many farms have surface and subsurface drainage systems that utilize roadside ditches for outlets. The district can share with road departments the location of pipe and other drainage outlets along with estimated peak flows.

The district can advise various road departments of special hydrologic conditions prevailing on adjacent farmland that may have a bearing upon the eventual design of non-erosive roadside ditches, the sizing and placement of culverts, and the need for special road bases.

The district could become an integral participant in the review of applications for private road construction, providing soils information and recommending road surface and roadside erosion control measures that might work.

Best Management Practices for roadside erosion control may include the use of shaping, sodding, improved grass waterways, log check dams, crossdrains, masonry or rock-lined ditches, and side slope stabilization to reduce both the scouring of ditches, and the downcutting of upper side slopes.

The district will promote the installation of grass variety trials along several sections of roadways to aid in the selection of specific varieties suitable for roadside erosion control and side slope stabilization.

Streamflow Augmentation

The basin's normal winter flow greatly exceeds water useage requirements. Impoundment of surplus runoff in upstream reservoirs for release during low flow periods is a possible step in improving water quality during the May 1-October 31 period. The Washington County Soil and Water Conservation District intends to support and assist the U.S. Bureau of Reclamation, which is making preliminary studies on the feasibility of constructing additional storage facilities in the basin.

Subbasin project: Dairy-McKay Hydrologic Unit Area

A U.S.D.A. Soil Conservation Service Dairy-McKay Hydrologic Unit Area proposal was prepared for these subwatersheds and submitted in June of 1990. The proposal represents a coordinated effort among federal, state, and local interests to implement water quality improvement and protection measures in the Dairy-McKay Hydrologic Unit Area. The plan outlined in the proposal is the cornerstone of implementation efforts aimed at sediment reduction for agriculture in the Tualatin Basin. The goal of plan implementation is to significantly reduce agriculture's contribution to the water quality problems in the Hydrologic Unit Area. The proposal was approved for funding in December 1990.

The Dairy-McKay Hydrologic Unit area contains a total of 164,070 acres, which represents one-third of the total Tualatin Basin land area. This area includes 74,450 acres of cropland, 81,420 acres of forest land, and 8,200 acres of land in other uses. The area is significant to agricultural water quality implementation efforts, as it includes one-half of the agricultural land in the Tualatin Basin.

This area is viewed as an important potential contributor of agricultural nonpoint source pollution in the basin. Monitoring data from 1989 and 1990 indicate that Dairy and McKay Creeks are exceeding the mandated loading capacities for phosphorus by two to three times the concentrations required to meet target loading capacities in 1993.

The Hydrologic Unit Area contains 45,000 acres of cropland that erode at three times the tolerable soil loss rate. It is estimated that 68,000 tons of sediment per year are delivered to streams in the area. Ninety percent (67,000 acres) of the total cropland in these watersheds lie within a one-half mile distance of a stream, with an estimated seventy percent of these acres lying within one-quarter mile of a stream. There are twelve miles of streambank needing protection and 30 miles needing riparian zone management measures.

All of the cropland in the area is rated as having an intermediate probability of pesticide loss with runoff. There are at least twelve CAFOs needing improved waste control systems in these subwatersheds.

The objectives of the agricultural portion of the plan include prioritization of significant agricultural nonpoint sources; adoption of Resource Management Systems on 21,000 acres in agricultural production, resulting in reduction of sediment delivery to streams by 24,000 tons per year; adoption of Best Management Practices that protect nine miles of streambank and improve 15 miles of riparian habitat, reducing sediment delivery to streams by eighty percent or 4000 tons per year; planning and implementation of waste management and utilization systems on eight CAFOs, reducing runoff and associated nutrient loading by two-thirds; and coordination of technical, financial, and educational aspects of ongoing nonpoint source pollution control efforts.

Under the plan, the Washington County Soil and Water Conservation District will serve as the Local Management Agency, coordinating interagency efforts to accelerate technical assistance to landowners, assisting with the

information and education program, and supporting implementation with staff and equipment. The Soil Conservation Service will locate, quantify, and prioritize erosion problem areas, sediment sources, and livestock operations needing assistance; develop plans, designs, and install Resource Management Systems in high priority areas; and report on progress. The Oregon State University Extension Service will assist with contacting farm operators in high priority areas, and will conduct information, education, and demonstration programs with the assistance of the other agencies.

Implementation of the Hydrologic Unit Area plan is a critical component of the overall plan to reduce agricultural nutrient and sediment loading of the Tualatin Basin's waters. Projected budget for this five-year effort is \$4,148,000, including expenditures of federal, state, and local funds.

As the implementation effort in the Dairy-McKay Hydrologic Unit Area is carried out, further information will be gained. Regardless of the discovered net instream phosphorus loading impacts from erosion, the Soil and Water Conservation District's objective will be to continue with work that has been ongoing in the county, encouraging conservation of soil and water resources, and implementing erosion control efforts throughout the district.

Available Control Options

A variety of control options are available to implement the strategies outlined above. These include:

Best Management Practices. A general list of Best Management Practices for water quantity and quality are listed in Appendix C. A specific listing and description of practices in several categories is included in Section II, Chapter I. The Washington County Soil and Water Conservation District, through its Citizen's Advisory Committees, has developed a list of potential pollution producing activities and Best Management Practices to address these sources. This list is included as Table 7 in Section II, Chapter VII. Additional information regarding Best Management Practices, including the standards and specifications, are found in the Soil Conservation Service Field Office Technical Guide, which is available in the Soil and Water Conservation District offices.

Changes in Land Use. Land use changes from pollution producing uses to pollution controlling uses are also effective in reducing nonpoint source pollution. Examples are: (a) Conversion of row cropland to permanently vegetated filter strips at the lower end of the cropland. Sediment carried off the cropland by rainfall and irrigation runoff is intercepted and filtered out by the vegetative mass in the filter strip; and (b) Restricting grazing livestock from free access to streambanks, thus allowing for establishment of riparian vegetative cover.

Passive Treatment Systems. A well managed riparian area can serve as a sponge to trap nutrients before they reach the waterway. The use of constructed wetlands for passive treatment of runoff from agricultural

operations is still in the conceptual/experimental phase, but might find applications in the reduction of nonpoint source pollution.

Discharge Permits. Container nursery operations with discharges during the irrigation season after June 1, 1993, will be required to obtain a Water Pollution Control Facilities permit with the Department of Environmental Quality. In such circumstances, monitoring requirements and discharge limitations for various parameters are specified. CAFO operations may also be placed on WPCF permits.

SECTION II

IMPLEMENTING THE MANAGEMENT PLAN

I. BEST MANAGEMENT PRACTICES and BEST MANAGEMENT SYSTEMS

Best Management Practices for Agricultural Pollution Control

Agricultural Best Management Practices for pollution control are those management practices and structural measures which are determined to be the most effective, practicable means of controlling and preventing pollution from agricultural activities. Practices may be used singly or together in a management system. Best Management Practices are actions taken by each individual agricultural operation for the achievement of water quality goals.

Nutrient management

Phosphorus application rates

In determining the most efficient rate of fertilizer application, it is imperative that the following are considered: soil and plant testing, realistic crop yield goals, and P credits from manure and waste material applications. Applying fertilizer at rates higher than crop utilization is unwise from both an environmental and economic viewpoint. Nutrients removed by runoff and erosion are lost capital investments to the grower. Phosphorus losses have been shown to increase in surface runoff with increasing P application rates.

* Phosphorus Soil Test Recommendations

To avoid over-fertilization of P and other nutrients, fertilizer applications should be made in accordance with soil test recommendations. Regular and systematic soil testing of cropland is required for successful implementation of this management practice.

As farmers use increasing amounts of fertilizer and waste materials and as the level of soil fertility increases, environmental concerns due to over-fertilization may arise. Soil tests are needed to keep soils within optimum nutrient supply ranges without detrimentally affecting the environment.

* Realistic Yield Goals

An important consideration in the determination of P application rates is the establishment of realistic yield goals. Only realistic yield goals will allow for accurate determination of appropriate P rates. Yield goal estimates that are too low will underestimate crop P needs and could reduce crop yield. Yield goal estimates that are too high will overestimate crop P needs and will increase soil P levels beyond that needed by the crop. Excessive soil P levels increase the likelihood for nutrient enrichment of sediment eroded from surface soils.

Yield goal estimates used to determine crop P requirements should be cautiously optimistic, but not more than 10 to 20 percent above the recent average yield experienced in a particular field.

Critical to successful estimation of yield goals is the presence of accurate records detailing crop yields from specific fields. Absence of crop yield records often results in other, less reliable estimates being utilized in the determination of crop P requirements. Growers should be encouraged to develop or maintain accurate records for crop yield. The information gathered from such recordkeeping can increase production efficiency and reduce threats to water quality.

* Phosphorus Credits

Efficient use of P inputs requires adjustment of fertilizer recommendations for P supplied by manure and waste material applications. Where applications of manure to cropland are common, manure can contribute all the crop's requirement for P. Both economic and environmental benefits can be realized if the nutrient supplying capacity of manure is correctly estimated. Economically, commercial fertilizer application rates can be reduced or eliminated when fertility credits from manure and other materials have been considered. Environmentally, the prevention of P over-fertilization reduces the threat of P contributions to surface water.

In order to utilize manure and other materials effectively, the nutrient supplying capacity of the material needs to be estimated. The most effective method of gauging nutrient content is to have samples chemically analyzed. Analysis provides farm-specific information which can improve estimates of crop fertilizer needs. In the absence of analysis, estimates of the amounts of plant nutrients supplied by livestock manures should be used.

Fertilizer placement

Placement of P significantly influences its availability for transport to lakes and streams by runoff water. If P inputs are broadcast on the soil surface and not incorporated, P levels in runoff can rise sharply.

To avoid surface water nutrient enrichment and preserve water quality, it is recommended that maintenance fertilizer applications for row crops be banded as starter fertilizer at planting. Band applications of P can usually supply all of the maintenance P requirements of row crops. This practice eliminates P enrichment of the soil surface and reduces P loads in runoff from cropland.

Large, corrective fertilizer applications of P that require broadcast applications should always be followed by incorporation as soon as possible after application.

Runoff Control

Confined Animal Feeding Operations

Runoff from holding areas and feedlots has been shown to contribute significant amounts of nutrients to nearby water bodies. Water quality

impacts are greater with decreased distance between a confinement area and a water body.

Management practices to prevent surface water pollution from barnyard runoff range from simple to complex, and depend on conditions existing at the site. These management practices can be grouped into the categories of water use, clean water diversions and runoff treatment practices. Practices within each category may be applied separately or in combination.

* Water use

Minimization of water use reduces the amount of wastewater to be managed. Examples include:

Reuse: The reuse or recycling of wastewater for purposes such as flushing manure.

Minimization: Adjustment of waterers and water systems to minimize the use of fresh water for drinking, cooling and cleaning purposes.

* Clean water diversions

Construction or installation of facilities to intercept and divert "clean" water can reduce the volume of manure-contaminated water to be managed. Practices can include the piping of open waterways which flow through confinement lots, installation of roof gutters on confinement buildings, and construction of a roof over a manure storage area. Preventing this clean water from passing through manure-contaminated areas can greatly reduce the total volume of water which needs to be managed. Some examples of clean water diversions include:

Diversion: An earthen berm constructed across the slope upgrade from a barnyard to prevent runoff from entering a yard. Runoff is channeled around the barnyard and safely outleted without picking up barnyard contaminants.

Roof Runoff System: A combination of rain gutters, downspouts, and conduits to redirect water from rooftops to areas outside a barnyard. An underground conduit is often used to carry roof water to a suitable outlet. This system reduces the amount of water that can wash animal wastes off the barnyard.

* Runoff Treatment Practices

Runoff treatment practices reduce the contaminant load of runoff leaving barnyards. Examples include:

Below-ground reception pits: These can be used for collection of flushed or scraped slurry.

Concrete lot and curb: The installation of these practices can allow for scraping of slurry or the loading of solids.

Filter Strip: Strips of close-growing vegetation can be planted downslope of animal confinement or manure application areas. The velocity of runoff water is reduced upon passage through a filter strip, and nutrients and suspended material remaining in the runoff water are filtered through the grass and absorbed by the soil. Filter strips are very effective in reducing threats to surface waters.

Settling Basin: A short wooden or concrete wall constructed around the lowest end of an animal lot designed to temporarily trap and pond runoff in order to allow time for manure solids to settle out. A concrete slab needs to be in place along the inside wall for scraping and removal of the manure solids.

Yard Shaping: Combinations of grading and filling with a suitable material so that runoff from a barnyard can be directed to a collection point.

Container Nurseries

Runoff from container nurseries can have the potential to contribute significant amounts of nutrients to nearby water bodies. Management practices to prevent discharge of nursery runoff range from simple to complex, and depend on hydrologic and management conditions existing at the individual site of operations.

Appropriate management practices to eliminate discharge of runoff water can be grouped into the general categories of water use and clean water diversion.

* Water use

Minimization: Minimization of water use reduces the amount of irrigation tailwater to be managed to avoid discharge. Practices can include an increase in frequency and reduction in volume of irrigation water applied during a single application; the use of drip or microjet irrigation systems where applicable, or the use of automatic timers and sensors. These practices individually or in combination can significantly reduce the total volume of water applied, while satisfying the needs of the crop.

Reuse: Practices can include the collection and reuse of irrigation water through the installation of tailwater recovery systems, ranging from simple to complex. Recovery and recycling systems can include hardware such as drains, drain tile, recovery pumps, recovery pits, recycling ponds, and other items.

* Clean water diversions

Clean water diversions can reduce the amount of water which is able to co-mingle with irrigation runoff and return flows, by diverting upslope, gutter, and road runoff. Preventing this clean water from mixing with the irrigation water can greatly reduce the total volume of

water which needs to be managed. Practices within each category may be applied separately or in combination.

Clean water diversions: Construction or installation of facilities to intercept and divert water from rooftops, roadways, and parking areas can reduce the volume of irrigation water to be managed.

Manure Management

The major environmental concerns associated with land application of manure are related to its effects on surface and groundwater quality. Runoff from manured fields carries bacteria and soluble and sediment-associated contaminants to surface waters. The highly available P content of manure can have immediate adverse effects on surface water quality.

Application methods

Similar to P from commercial fertilizer inputs, threats to surface water from manure will be minimized if applications are incorporated beneath the soil surface.

When incorporation of manure is not practical, manure spreading should be directed to fields that do not discharge unfiltered runoff to streams and lakes and that have runoff control practices in place.

Application rates

While manure can provide part or all of the nutrient requirements for crop production, manure application rates should not exceed the agronomic utilization rate for the crop being grown. Soil runoff and erosion control practices such as residue management, conservation tillage, contour farming and others are strongly recommended on soils with P levels in excess of crop needs.

Application timing

Manure should not be spread on sloping lands any time a runoff producing event is likely. However, runoff producing events are difficult to predict, and the elimination of manure applications to sloping lands is seldom a practical consideration for landowners. The period of major concern with the application of manure from a surface water quality standpoint is in the winter and early spring months. Manure applied on wet or frozen ground has increased susceptibility of contributing nutrients to surface waters due to runoff induced by winter and spring rains.

If winter applications of manure must be made, the risk should be minimized to the greatest extent possible.

Site considerations

As implied throughout this chapter, the main site characteristics affecting nutrient contributions to surface water are those affecting soil runoff and erosion. These include slope interactions, soil erodibility and

infiltration characteristics, rainfall characteristics, cropping systems and the presence of soil conservation practices.

Manure storage

During periods when suitable sites for land application of manure are not available (i.e., soils are frozen or saturated), the use of manure storage facilities is recommended. Storage facilities will allow manure to be stored until conditions permit land application and incorporation which will reduce nutrient enrichment threats to surface and groundwater.

Appropriate waste management practices can include the construction and installation of waste storage facilities such as tanks, pits, basins, and buildings, and construction of facilities for solids separation, such as settling basins and mechanical separators. Adoption of practices in this instance can help provide the facilities necessary to assure proper and adequate storage of wastes and wastewater to eliminate discharges.

Guidelines and specifications for the planning, construction and location of manure storage facilities are contained in the Oregon Animal Waste Installation Guidebook, and technical assistance is available through the local Soil and Water Conservation Districts.

Riparian Area Management

Maintenance of riparian vegetation provides a natural bio-filtration system. The vegetation along stream banks and around wetlands and natural ponds dissipates energy and reduces erosion and enhances sediment deposition, preventing sediment from entering the nearby waterbodies. When kept in a healthy, actively growing condition, this vegetation will take up nutrients which otherwise would pollute nearby waters. For these reasons, protection of riparian areas is recommended.

Use of managed filter strips adjacent to riparian areas for riparian area protection is also encouraged. Strips of close-growing vegetation surrounding water bodies can reduce the sediment and nutrient content of runoff waters reaching them. The velocity of runoff is reduced when passing through a filter strip as is its capacity for transporting sediment and nutrients. Sediment is deposited and runoff infiltrates or passes through the buffer strip with a substantially reduced contaminant load.

The use of filter strips, along with upland conservation practices, are encouraged as an integral component of an agricultural land treatment erosion and runoff control plan.

The width of an effective filter strip varies with land slope, type of vegetative cover, watershed area, etc. Filter strip dimensions need to be specifically designed for given field and cropping conditions. Technical guidance for design of filter strips is available in the USDA SCS Handbook of Conservation Practices, Supplement, 1988.

Managed riparian areas containing filter strips can be designed, created, and maintained on a site-specific basis within the context of best management systems for the benefits of erosion protection, water quality,

and agricultural production. The installation and use of filter strips are encouraged by the availability of technical and financial assistance, as well as tax incentives.

In areas that currently have little or no riparian vegetation, and streambank erosion is a recognized problem, re-establishment of streambank vegetation and use of managed filter strips for some distance back from the bank is strongly recommended and may become a requirement if the voluntary phase of the plan implementation does not result in compliance with the load allocations.

Recommended Practices for Riparian Area Management

- * Limit access of livestock to streambanks, wetlands, and other water quality sensitive areas
- * Install filter strips adjacent to surface waters receiving runoff from cropland fields
- * Install out-of-stream water supply systems for livestock
- * Maintain existing riparian vegetation
- * Re-establish streambank vegetation

- * Limit access of livestock to streambanks, wetlands, and other water quality sensitive areas

Limiting the access of livestock to sensitive areas is highly recommended to avoid direct discharge of animal wastes, to avoid erosion impact, and to prevent the degradation of riparian areas. Practices include:

Exclusion fencing: Installation or relocation of exclusion fences prevents livestock from entering surface waters and can provide a safe distance between confinement areas and surface waters.

Cattle lane and fencing: Heavily used cattle lanes should be designed and shaped to prevent runoff problems or standing water. Also, livestock must be fenced out of grass filter strips and other seeded areas to avoid soil erosion and ensure proper functioning of a barnyard runoff control system.

Stream crossing: Trampled streambanks erode easily and add to the degradation of surface water quality by sedimentation and direct manure contributions. When livestock must cross a small stream to get to pasture, access to the stream should be limited, and a stable crossing provided. Concrete ramps with a rough surface usually make the most desirable cattle crossings. Gates can be

designed which are opened to direct cattle across a stream channel and then closed so that the channel is unobstructed when the crossing ramp is not in use.

- * **Install filter strips adjacent to surface waters receiving runoff from cropland fields**

Strips or areas of close growing vegetation (often hay or grass) for removing sediment, organic matter, and other pollutants from runoff and wastewater. These are often located between cropland and a streambank, wetland, or pond. The strips are of sufficient width to slow the velocity of runoff flow and allow sediment to be deposited.

- * **Install out-of-stream water supply systems for livestock**

Upstream diversions and transport systems can be installed to create out-of-stream watering facilities for livestock. Pumped systems are another option.

- * **Maintain existing riparian vegetation**

The vegetation along streambanks and around wetlands and natural ponds dissipates energy and reduces erosion and enhances sediment deposition.

- * **Re-establish streambank vegetation**

Re-establishment of streambank vegetation and use of managed filter strips for some distance back from the bank is recommended to stabilize the riparian area and provide a filtering system for nutrients and sediment.

Erosion Control

Control of runoff and erosion are interrelated. Numerous management practices for the control of runoff and soil erosion have been researched, developed, and implemented on the agricultural landscape. These practices have been shown to be effective in reducing contaminant transport to surface waters. Runoff and erosion control practices ranges from changes in agricultural land use management to the installation of structural devices.

Practices for runoff and soil erosion control include the following:

Management practices

Conservation (permanent) cover: Establishment and maintenance of perennial vegetative cover to protect soil and water resources on land retired from agricultural production.

Conservation cropping sequence (rotation): An adapted sequence of crops including close-growing grasses, legumes, and small grains with row crops to provide organic residue for maintenance or improvement of soil tilth and erosion reduction.

Conservation tillage: Tillage practices that leave residues of the previous crop on the soil surface. Options range from reduced tillage systems such as chisel, disking, ridge-till, etc. to no-till, in which the soil is not disturbed. Surface residues and the increased surface roughness of conservation tillage systems reduce runoff and erosion.

Contour farming: Farm operations (tillage, planting, cultivation, etc.) on sloping land performed perpendicular to slope on the contour of the landscape.

Contour strip cropping: Farming operations performed perpendicular to slope on the contour with alternating strips of row crops and hay or small grain.

Cover crops: Close-growing grasses, legumes or small grain planted after row crop removal primarily for seasonal erosion protection and soil improvement. The crops provide vegetative cover to protect the soil when other crop canopy is absent or inadequate.

Filter (buffer) strips: Strips or areas of close growing vegetation (often hay or grass) for removing sediment, organic matter, and other pollutants from runoff and wastewater. These are often located between cropland and a streambank, wetland, or pond. The strips are of sufficient width to slow the velocity of runoff flow and allow sediment to be deposited.

Structural practices

Diversions: Channeled ridges constructed perpendicular to slope which divert surface runoff away from critical areas.

Fencing: Barriers that enclose or divide land areas and prohibit livestock, wildlife, etc. access to critical areas such as streambanks.

Grade stabilization structures: Structures to stabilize slope gradients, control erosion, and prevent the formation or advance of gullies. Structures include earth embankments, drop spillways, box inlets, ponds, etc.

Grassed waterways: Graded, vegetated channels for the purpose of transporting runoff from cropland at nonerosive velocities.

Terraces: A series of earthen embankments or channels and ridges constructed perpendicular to slope at determined intervals which intercept and transport runoff at nonerosive velocities. Terraces are usually of steep grass-back (bench) or gentle sloped back (broadbase) design.

**Recommended Practices for Phosphorus Management
to Protect Water Quality**

- * Utilize soil erosion control practices to minimize runoff and soil loss.
- * Base phosphorus application rates on realistic yield goals.
- * Credit phosphorus contributions from manure and other organic wastes.
- * Apply phosphorus at recommended rates for crop production.
- * Apply phosphorus in accordance with crop nutrient requirements.
- * Incorporate broadcast applications of corrective phosphorus fertilizer; band-apply maintenance fertilizer.
- * Store manure in properly located and constructed facilities during periods when land application is not suitable.
- * Avoid manure applications to saturated soils.
- * Incorporate manure applications.
- * Apply manure uniformly.
- * Control runoff from barnyards and feedlots.
- * Install filter strips adjacent to surface waters receiving runoff from cropland fields.

- * Utilize soil erosion control practices to minimize runoff and soil loss.

A most important practice to reduce phosphorus enrichment of surface waters is the implementation of sound soil conservation practices. Runoff and erosion control practices such as conservation tillage, contour farming, rotations, diversions, terraces, grassed waterways, etc. should be utilized.

- * Base phosphorus application rates on realistic yield goals.

Realistic goals based on recent crop yield experience will allow for accurate determination of appropriate P application rates for crop production. Yield goal estimates used to determine crop P requirements should be cautiously optimistic, but not more than 10 to 20% above the recent average yield experienced in a particular

field. It is strongly recommended that growers develop or maintain accurate recording systems for crop yield.

- * **Credit phosphorus contributions from manure and other organic wastes.**

Fertilizer recommendations for P should be adjusted to account for the P supplied by manure, sludge, effluent, and organic waste applications in order to make the most efficient use of P inputs. Where manure applications to cropland are common, manure can contribute all the crop's requirement for P.

- * **Apply phosphorus at recommended rates for crop production.**

Applications at rates higher than crops can utilize are unwise from both an environmental and economic viewpoint. To avoid over-fertilization of P and other nutrients, fertilizer application rates should be in accordance with soil test recommendations. Regular and systematic soil testing of cropland is required for determining the most efficient rate of fertilizer application.

- * **Apply phosphorus in accordance with crop nutrient requirements.**

If P soil test levels reach high levels, manure applications should be reduced and P-demanding crops should be planted. At excessive P soil test levels, applications of manure and other sources of P should be discontinued until soil test levels decrease. Soil runoff and erosion control practices such as residue management, conservation tillage, contour farming, and others are strongly recommended on soils with P levels in excess of crop needs. In the absence of adequate runoff and erosion control practices on soils susceptible to water erosion, it is recommended that high P soil test levels not be exceeded.

- * **Incorporate broadcast applications of corrective phosphorus fertilizer; band-apply maintenance fertilizer.**

Placement of P significantly influences amounts subject to transport to lakes and streams by runoff water. If P inputs are broadcast on the soil surface and not incorporated, P levels in runoff have been shown to rise sharply. To protect surface water quality, it is recommended that corrective P fertilizer applications be broadcast and followed by immediate incorporation. Maintenance fertilizer applications for row crops should be banded.

- * **Store manure in properly located and constructed facilities during periods when land application is not suitable.**

During periods when suitable sites for land application of manure are not available, the use of properly located and constructed manure storage facilities is recommended. Storage facilities will allow manure to be stored until conditions permit land application and incorporation which will reduce nutrient enrichment threats to ground and surface water.

* **Avoid manure applications to saturated soils.**

Manure applications to saturated soils should be avoided due to increased susceptibility for nutrient contributions to surface waters with runoff.

* **Incorporate manure applications.**

The risk of increased nutrient contributions to surface waters from manured cropland will be minimized if applications are incorporated beneath the soil surface. To protect surface water quality, manure applications to fields should be followed with incorporation no later than 72 hours after application.

* **Apply manure uniformly.**

Nutrient credits measured through manure or soil testing assume uniform application. Nonuniform applications of manure result in improper nutrient crediting and can increase the possibility of over-fertilization, which threatens ground and surface water quality.

* **Control runoff from barnyards and feedlots.**

Runoff from barnyards and feedlots can contribute significant amounts of nutrients to surface waters. Clean water diversions reduce the amount of water entering the barnyard by diverting upslope and rooftop runoff. Runoff treatment practices reduce the contaminant load of runoff leaving barnyards.

* **Install filter strips adjacent to surface waters receiving runoff from cropland fields.**

Strips of close-growing vegetation surrounding water bodies can reduce the sediment and nutrient content of runoff waters reaching them. The velocity of runoff is reduced when passing through a filter strip as is its capacity for transporting sediment and nutrients.

Best Management Systems

Best Management Practices and land use changes are most effective when selected and installed as integral parts of a comprehensive resource plan based on natural resource inventories and assessment of management practices. The result is an approach to the solution using the Best Management System concept. Best Management Systems use Best Management Practices and land use changes which are designed to be complementary, and when used in combination, are more technically sound than when considering each practice separately.

Best Management Systems are based on six categories of resource concerns, water quality being but one issue. The six categories are:

1. Erosion control
2. Water disposal
3. Animal waste and agri-chemical management
4. Resource management
5. Water management (quantity as well as quality)
6. Offsite effects

To assure that a Best Management System contributes to improvement of water quality, the planning and evaluation of alternative practices includes the following steps:

1. Assessment and evaluation of water resource information along with other plant and soils information.
2. Determination of the effects of agricultural operations on water quality and/or quantity in the area of concern.
3. Evaluation of current Best Management Systems effects on water resources.
4. Identification of applicable practices that favorably affect water resources.
5. Evaluation of various combinations of practices.
6. Selection of combinations of practices for Best Management Systems.

Conservation Planning

The Soil and Water Conservation District policy for assisting land owners and operators with their water quality initiatives is that all proper analyses of alternative actions to improve water quality are based on a conservation plan. The conservation plan is a comprehensive land management plan used for making decisions about applying Best Management Practices to conserve soil, water, and related plant and animal resources on all or part of a farm unit. The conservation plan addresses site-specific problems through the selection of individual Best Management Practices or Best Management Systems to be implemented for the protection of natural resources.

Plans are prepared by the district or other technical sources in cooperation with the individual landowner. The district recommends that such plans be developed and adopted by cooperators prior to committing available technical or financial assistance for installation of water quality measures. The Soil and Water Conservation District believes strongly in this approach as its best effort to assure that proper practices are applied and that the best use of limited financial assistance is made.

Analysis of Best Management Systems or Best Management Practice potential effectiveness in reducing nonpoint source pollution can be accomplished using physical process simulation models. Several models are available through the U.S. Department of Agriculture which can be operated on a microcomputer. The CREAMS, AGNPS, EPIC, and SWRRB models are among the list

of potential software packages which can be used to evaluate the potential benefits of Best Management Practices. The Soil and Water Conservation District plans to develop the capability to execute one or more of these models to assist cooperators as they plan their Best Management Systems.

Financial assistance in the range of \$3,500 to \$10,000 per year to individuals and groups currently is available for installation of certain conservation measures, principally via cost-sharing from the Agriculture Conservation Program, which is administered by the Agricultural Stabilization and Conservation Service.

Voluntary Efforts

Control of nonpoint source pollutants from agriculture is carried out in a cooperative spirit through the volunteer efforts of individual farmers, aided by the informational, technical, and financial assistance of local, state, and federal agencies. The implementation phase of this plan focuses on education and voluntary adoption of Best Management Practices to prevent pollution at its source.

Voluntary efforts to implement Best Management Practices will be encouraged by the Soil and Water Conservation District at all stages throughout the information and education campaign. If voluntary efforts fail to achieve necessary reductions in pollutant loadings to the basin's waters from agricultural sources, any other compliance efforts should be invoked as a last resort only after all efforts at voluntary compliance have failed.

Enforcement

If voluntary compliance fails to achieve water quality goals, then more aggressive means of ensuring compliance with load allocations, focusing on the largest remaining sources, will be employed.

The existing CAFO regulations and the container nursery rules include provisions for regulatory action if voluntary efforts fail to achieve water quality objectives. These provisions allow for the formulation of discharge permits with operators, and the Department of Environmental Quality has authority for enforcement, as stipulated in Oregon Revised Statutes 468.470.

Under the existing CAFO program rules and statutes the Department of Environmental Quality has current authority for enforcement of water quality standards through provisions of Oregon Revised Statutes 468.470. The Department of Environmental Quality has delegated responsibilities to the Oregon Department of Agriculture for complaint investigation and compliance verification. Compliance tools available are Stipulated Consent Orders. Enforcement tools available through Oregon Administrative Rules 340, Division 12 include civil penalties and Water Pollution Control Facilities Permits, available through the Department of Environmental Quality.

Under the Container Nursery Irrigation Water Management Plan, the Department of Environmental Quality has authority for enforcement of the provisions of this plan if individual farm operations do not meet the compliance date of June 1, 1993. The Oregon Department of Agriculture has been delegated

responsibilities for compliance verification. Compliance tools available are Stipulated Consent Orders. Enforcement tools are civil penalties and Water Pollution Control Facilities permits.

In addition, historically, existing county ordinances have had provisions allowing the county to pass along the costs of abating specific sources of agricultural pollution to operators. An example is the assessment of costs by a county for public roadside ditch cleaning where specific operations have been identified as the source of sediment. In Washington County, authority for this type of enforcement rests with the county government.

By the end of June 1992 and in November 1992, the Oregon Department of Agriculture, with the cooperation and assistance of the Department of Environmental Quality, will assess the compliance status of agricultural sources in the Tualatin Basin. This assessment will include:

1. an accounting of the numbers and kinds of practices that have been applied,
2. where possible, an estimate of the amount of phosphorus/sediment that has been prevented from entering the waters of the state,
3. a summary of available monitoring data, and
4. identification of the potential remaining sources of phosphorous loadings.

If monitoring data by the end of June 1992 indicate that the load allocations for agriculture are not being met, a more aggressive enforcement regime will begin. This will start by concentrating on sub-basins known to be out of compliance and on operations/practices known to be contributing sources of phosphorus.

Enforcement of regulations related to CAFOs will be accelerated by shifting from the existing complaint driven system (described in the Control Strategies section) to a more aggressive inspection and enforcement referral program using the priorities generated in the inventory phase of this plan. If necessary, every CAFO in problem sub-basins will be inspected for compliance.

In addition, if monitoring data by June of 1992 indicate that the load allocations for agriculture are not being met, the Oregon Department of Agriculture will begin to work with the affected counties to explore and examine the possibilities for various enforcement mechanisms to be incorporated into ordinances, covering the range of options from allowable maximum discharge limits to the implementation of nutrient management and conservation plans for operations in the basin.

If the accelerated enforcement described above results in compliance with the load allocations by November 1992, then the implementation of county ordinances for enforcement would not be required. If, however, monitoring data by November 1992 demonstrates that load allocations are still not being met, then county ordinance enforcement mechanisms would be implemented in January 1993.

Through June 1, 1993, the Oregon Department of Agriculture will be working with container nursery operations to ensure compliance with provisions of the statewide Container Nursery Irrigation Water Management Plan. After June 1, 1993, any container nursery operations existing prior to that date and having irrigation season discharges without a Water Pollution Control Facilities permit from the Department of Environmental Quality will be referred to that agency for enforcement.

Ultimately, the Department of Environmental Quality has authority for imposing a moratorium on any activities causing TMDLs to be exceeded after June 30, 1993 ((Oregon Administrative Rules 340-41-470-(3)(a)).

Complaint Procedures

In the event of any complaints against agricultural operations in the Tualatin Basin, the following order of events is to be pursued:

1. All complaints will be referred to the Oregon Department of Agriculture
2. The Oregon Department of Agriculture by contract with the Soil and Water Conservation Districts or otherwise, will investigate complaint validity
3. The Oregon Department of Agriculture or Soil and Water Conservation District will document the situation
4. On complaints determined to be valid, the Oregon Department of Agriculture or the Soil and Water Conservation District will attempt to secure landowner cooperation for abatement
5. The Oregon Department of Agriculture will refer valid cases to the Department of Environmental Quality or county, as appropriate, for resolution.

II. AGENCIES INVOLVED AND THEIR RESPONSIBILITIES

Management Agencies

The Oregon Department of Agriculture has been identified as the Designated Management Agency having authorities and responsibilities relating to agricultural nonpoint sources of pollution in the state. Sections of Oregon Revised Statutes Chapters 561 and 568 give the Department of Agriculture authority to implement portions of overall nonpoint source plans.

As the Designated Management Agency, the Oregon Department of Agriculture is responsible for the overall management of the agricultural portion of the Tualatin plan, coordinating the activities of all agencies involved. The Department is responsible for assisting with the development and approval of the priority watershed management plan for agriculture, reporting to the Department of Environmental Quality on project progress and recommending project modifications.

The specific responsibilities of the Department of Agriculture as the Designated Management Agency for agricultural nonpoint source control efforts in the Tualatin Basin, defined in the Memorandum of Agreement and the Nonpoint Source Control Action Plan between the Department of Environmental Quality and the Oregon Department of Agriculture are summarized below:

1. to assist the Local Management Agency with the planning and implementation of the agriculturally related water quality program;
2. to provide an accounting of nonpoint source implementing activities resulting from federal Clean Water Act Section 319 management programs or other nonpoint source initiatives;
3. to pursue continued implementation of existing efforts to protect water quality;
4. to cooperate with other agencies to develop and implement a nonpoint source program for container nurseries;
5. to cooperate with the Department of Environmental Quality in continuing its existing CAFO program;
6. to assist the Local Management Agency in identifying and obtaining the funding and staffing requirements and priorities necessary to accomplish nonpoint source program objectives;
7. to assist the Department of Environmental Quality in exploring other sources of funding and support for nonpoint source program objectives;
8. to cooperate with the Department of Environmental Quality to involve local governments and districts in the planning and implementation of the nonpoint source control program

Local Management Agencies are those local units of government identified as having responsibility for nonpoint source control activities, including development and implementation of Best Management Practices, and providing informational, technical and cost-share assistance to landowners for Best Management Practice installation to improve water quality. For agricultural activities in the Tualatin Basin, the Soil and Water Conservation Districts, as the Oregon Department of Agriculture's Local Management Agencies, will

have overall responsibility for implementing the Tualatin River Watershed Management Plan for Controlling Rural Nonpoint Source Pollution.

All of these activities may be carried out by the management agencies or by delegation to other agencies or units of government. The management agencies are still responsible for all activities whether they are done by the management agency or delegated to another agency. Other management agencies which the Department of Agriculture and the Soil and Water Conservation Districts will be interacting with include the affected county governments and Unified Sewerage Agency.

Cooperating Agencies

In addition to the management agencies, the Tualatin River Watershed Management Plan implementation phase will receive assistance from the agencies listed below. Interagency cooperation among agriculturally and non-agriculturally oriented agencies, geared toward a common goal of improved water quality will be critical to the success of this program.

1. U.S.D.A Soil Conservation Service: This agency works through the local Soil and Water Conservation Districts. The Soil Conservation Service provides on-site technical assistance to individual farmers for installation of conservation practices. The county Soil Conservation Service personnel work with other project personnel to provide inventories of conservation needs and estimated costs of Best Management Practices, and aid the Soil and Water Conservation District in the planning, design, layout, supervision, and certification of practice installations.
2. U.S.D.A. Agricultural Stabilization and Conservation Service: Under contract with the Soil and Water Conservation District, the Washington County office of the Agricultural Stabilization and Conservation Service will provide assistance, where appropriate, for fiscal management in the project. In addition, cost-sharing provided by an ongoing Agricultural Conservation Program will be coordinated with the installation of practices in the project area. The locally elected Agricultural Stabilization and Conservation county committee decides which proposals from area farms receive cost-sharing assistance.
3. Oregon State University Extension Service: County Extension agents will provide expertise in planning, coordinating, and conducting public information, education, and participation efforts. The Oregon State University Extension Service will also assist the district in the development of watershed tours, workshops, and newsletters.
4. Oregon Department of Environmental Quality: The Department of Environmental Quality has overall administrative responsibility for the Oregon nonpoint source abatement program of which the Tualatin priority watershed project is a part. The Department is responsible for assisting with efforts to secure resources for implementing practices to improve water quality in the basin, for water quality assessment, and for evaluation of the overall watershed project.

III. ADMINISTRATIVE PROCEDURES

For a project as complicated and involved as the Tualatin River Watershed Management Plan implementation phase, there is a need for a detailed tracking system. The system used must keep up to date information on accomplishments and work to be done, and will help in scheduling watershed activities in the future. The following information will be recorded:

1. Landowner contacts: who has been contacted; when; who is left to contact.
2. Update of inventory information: if changes have occurred from the inventoried conditions these changes should be noted.
3. Landowner contracts: what sources were controlled and to what degree; what this represents in terms of the objectives set for each subwatershed.
4. Status of cost-share agreements: what has been designed, installed, certified, and reimbursed.

The district also recommends that when new or additional water quality programs having potential impact on agriculture are initiated in the future, procedures are established which assure, through problem identification and public comment, that the public interest is being served.

IV. PROJECT COSTS

Management Needs and Costs

The approximate extent and cost of treatment measures for runoff and erosion control necessary to adequately treat the agricultural lands of the county has been estimated using the Soil Conservation Service's Conservation Needs Inventory, earlier CAFO and streambank erosion studies, the Soil Conservation Service's Hydrologic Unit Area Proposal, and information from local agencies and individuals. In the absence of detailed inventories, it is felt that these estimates provide the best current approximation of needs. Inventorying of basin needs in the various categories outlined in the Control Strategies section is necessary to refine these estimates. Table 5 summarizes the estimated treatment needs and associated costs for activities outlined in the Control Strategies section, for implementation in 1991-1993.

Table 5 Estimated treatment needs and projected costs

ACTIVITY SUMMARY	1991		1992		1993		3 YEAR TOTALS	
	SWCD	Others	SWCD	Others	SWCD	Others	SWCD	Others
CAFOs	36,000	325,750	27,500	463,250	27,500	463,250	91,000	1,252,250
Combined Subtotal	361,750		490,750		490,750		1,343,250	
CONTAINER NURSERIES	600	145,700	750	567,500	750	1,000	2,100	714,200
Combined Subtotal	146,300		568,250		1,750		716,300	
SLUDGE & EFFLUENT APP.	1,500	1,000	3,500	2,000	5,000	2,000	10,000	5,000
Combined Subtotal	2,500		5,500		7,000		15,000	
UPLAND EROSION	73,000	292,880	62,000	828,640	25,000	282,880	160,000	1,404,400
Combined Subtotal	365,880		890,640		307,880		1,564,400	
STREAMBANK EROSION	67,000	642,620	51,650	1,910,360	18,350	639,120	137,000	3,192,100
Combined Subtotal	709,620		1,962,010		657,470		3,329,100	
ROADSIDE EROSION	2,000	2,000	3,000	2,500	3,000	2,500	8,000	7,000
Combined Subtotal	4,000		5,500		5,500		15,000	
ADDITIONAL ADMIN.	61,000		43,000		41,000		145,000	
Combined Subtotal	61,000		43,000		41,000		145,000	
TOTALS	241,100	1,409,950	191,400	3,774,250	120,600	1,390,750	553,100	6,574,950
COMBINED TOTALS	1,651,050		3,965,650		1,511,350		7,128,050	

CONFINED ANIMAL FEEDING OPERATIONS ESTIMATES (40 Operations)

ACTIVITY	1991		1992		1993		3 YEAR TOTALS	
	SWCD	Others	SWCD	Others	SWCD	Others	SWCD	Others
Inventory	3,500	2,500	--	--	--	--	3,500	2,500
GIS/Tracking	500	250	500	250	500	250	1,500	750
Info & Education	1,000	2,000	1,000	2,000	1,000	2,000	3,000	6,000
Waste Mgmt. Plans	(20 ea) 20,000	20,000	(10 ea) 10,000	10,000	(10 ea) 10,000	10,000	(40 ea) 40,000	40,000
Upgrade Systems	(10 ea) 10,000	300,000	(15 ea) 15,000	450,000	(15 ea) 15,000	450,000	(40 ea) 40,000	1,200,000
Report Progress	1,000	1,000	1,000	1,000	1,000	1,000	3,000	3,000
TOTALS	36,000	325,750	27,500	463,250	27,500	463,250	91,000	1,252,250
COMBINED TOTALS	361,750		490,750		490,750		1,343,250	

CONTAINER NURSERIES ESTIMATES (15 Operations)

ACTIVITY	1991		1992		1993		3 YEAR TOTALS	
	SWCD	Others	SWCD	Others	SWCD	Others	SWCD	Others
Info & Education	500	500	500	2,000	500	500	1,500	3,000
Management Plans	(5)	7,500	(10)	15,000				22,500
Plan Review	(5)	2,500	(20)	10,000				12,500
Upgrade Systems	(3)	135,000	(12)	540,000				675,000
Report Progress	100	200	250	500	250	500	600	1,200
TOTALS	600	145,700	750	567,500	750	1,000	2,100	714,200
COMBINED TOTALS	146,300		568,250		1,750		716,300	

SLUDGE AND EFFLUENT APPLICATION

ACTIVITY	1991		1992		1993		3 YEAR TOTALS	
	SWCD	Others	SWCD	Others	SWCD	Others	SWCD	Others
Review of Plans	1,500	1,000	3,500	2,000	5,000	2,000	10,000	5,000
TOTALS	1,500	1,000	3,500	2,000	5,000	2,000	10,000	5,000
COMBINED TOTALS	2,500		5,500		7,000		15,000	

UPLAND EROSION ESTIMATES

ACTIVITY	1991		1992		1993		3 YEAR TOTALS	
	SWCD	Others	SWCD	Others	SWCD	Others	SWCD	Others
Inventory	21,000		9,000				30,000	
GIS/Tracking	12,000		20,000		8,000		40,000	
Info & Education	10,000	20,000	5,000	10,000	5,000	10,000	20,000	40,000
Landowner Contact	18,000		8,000		4,000		30,000	
Reporting	12,000		20,000		8,000		40,000	
In-Ground Nurseries Cover Crops 900 ac @ \$100/ac		18,000		54,000		18,000		90,000
Small Fruit-Berries Cover Crops 3,000 ac @ \$100/ac		60,000		180,000		60,000		300,000
Tree Fruit-Nuts Cover Crops 3,745 ac @ \$100/ac		74,900		224,700		74,900		374,500
Christmas Trees Cover Crops 2,000 ac @ \$100/ac		40,000		120,000		40,000		200,000
Grain Conserv. Practices 11,160 ac @ \$15/ac		33,480		100,440		33,480		167,400
Vegetable/Field Crops Conserv. Practices 2,500 ac @ \$15/ac		7,500		22,500		7,500		37,500
Seed Crops Conserv. Practices 9,000 ac @ \$15/ac		27,000		81,000		27,000		135,000
Pasture-Hay Land Reseeding 600 ac @ \$100/ac		12,000		36,000		12,000		60,000
TOTALS	73,000	292,880	62,000	828,640	25,000	282,880	160,000	1,404,400
COMBINED TOTALS	365,880		890,640		307,880		1,564,400	

STREAMBANK EROSION ESTIMATES

ACTIVITY	1991		1992		1993		3 YEAR TOTALS	
	SWCD	Others	SWCD	Others	SWCD	Others	SWCD	Others
Stabilization								
Tree Planting 30 mi @ 5,225/mi		31,350		94,050		31,350		156,750
Fencing 31,000 LF @ 85/LF		5,270		15,810		5,270		26,350
Structural 8 mi @ 370,000/mi		592,000		1,776,000		592,000		2,960,000
Riparian Areas Filter Strips 500 ac @ \$70/ac		7,000		21,000		7,000		35,000
Inventory	24,500		10,500				35,000	
Info & Education	3,500	7,000	1,750	3,500	1,750	3,500	7,000	14,000
Landowner Contact	21,000		9,400		4,600		35,000	
GIS Tracking	9,000		15,000		6,000		30,000	
Reporting	9,000		15,000		6,000		30,000	
TOTALS	67,000	642,620	51,650	1,910,360	18,350	639,120	137,000	3,192,100
COMBINED TOTALS		709,620		1,962,010		657,470		3,329,100

ROADSIDE EROSION

ACTIVITY	1991		1992		1993		3 YEAR TOTALS	
	SWCD	Others	SWCD	Others	SWCD	Others	SWCD	Others
Application Review	1,000	1,000	1,000	1,000	1,000	1,000	3,000	3,000
Technical Assistance	1,000	1,000	2,000	1,500	2,000	1,500	5,000	4,000
TOTALS	2,000	2,000	3,000	2,500	3,000	2,500	8,000	7,000
COMBINED TOTALS		4,000		5,500		5,500		15,000

ADDITIONAL ADMINISTRATIVE ESTIMATES

ACTIVITY	1991		1992		1993		3 YEAR TOTALS	
	SWCD	Others	SWCD	Others	SWCD	Others	SWCD	Others
Support	17,000		15,000		15,000		47,000	
Office	12,000		12,000		10,000		34,000	
Equipment	32,000		16,000		16,000		64,000	
TOTALS	61,000		43,000		41,000		145,000	

NR*24

Local Assistance Needs and Costs

The Soil and Water Conservation District's annual budget has historically been less than \$10,000. Sources of revenue are limited to an annual fund transfer from the State of Oregon (\$1,888 for 1990), small equipment rental, and development site soils inspection fees. The district's volunteer board of directors contributes countless hours per year. Office space is shared with the Soil Conservation Service in Hillsboro, and the district enjoys "no cost" access to some Soil Conservation Service office, business, and technical equipment.

The Soil and Water Conservation District counts numerous federal and state personnel among its resources available to address conservation and water quality problems, through several memoranda of understanding. The combined value of the district's budget, volunteer services, and the local personnel and facilities of the agencies is estimated to be nearly \$106,000 in 1990.

The Soil and Water Conservation District's ability to carry out this nonpoint source water management plan to its fullest, as described above, is contingent upon receiving adequate funds. In summary, if the district's annual operating budget remains at its present level, progress toward realizing its goals will be limited to what can be accomplished through existing programs at their current levels, and the volunteer efforts of the district personnel. The extent to which the Soil and Water Conservation District's goals can be attained, therefore, is in direct relation to its future funding level.

Potential Funding Sources

The Soil and Water Conservation District, the Oregon Department of Agriculture, and other cooperating agencies plan to avail themselves to all opportunities to obtain grants, cost-sharing funds, assessments, and monies from any other sources which can be used to accelerate the installation of nonpoint source pollution controlling practices during the next three years. The Soil Conservation Service's Hydrologic Unit Program, EPA's 319 grants, Governor's Watershed Enhancement Board grants, and other federal and state programs are potential sources of these funds. Traditional loan and grant programs include the Farmers Home Administration's rural and agricultural loan programs and the Resource Conservation & Development Program, a U.S.D.A. administered program.

Additionally, it is anticipated that some Best Management Practices and associated water quality improvements can be attained without special incentive monies, where the practices are self-liquidating, or otherwise to the advantage of the individual operator.

Funding Mechanisms

Base Program - In addition to the USDA grant and cost share opportunities traditionally available to the agricultural community (as well as other grants potentially available such as the Governor's Watershed Enhancement Board and EPA's nonpoint source implementation grants), stable, long term

funding will be required to operate an agricultural base program for water quality management. To carry out its responsibilities as Designated Management Agency, the Oregon Department of Agriculture needs a full time staff person to work on implementation of the Tualatin Watershed Management Plan. The affected Soil and Water Conservation Districts also need additional stable resources.

The Oregon Department of Agriculture does receive some stable funding from the CAFO program. The Oregon Department of Agriculture is also seeking authority from the 1991 legislature to collect fees from container nursery operators for implementation of the Container Nursery Irrigation Water Management Plan. However, these are statewide programs and so the resources collected must be used across the entire state and cannot be concentrated in the Tualatin Basin. They will provide at most 10% of the estimated \$165,000 needed annually to operate a base program in the Tualatin Basin.

Currently, the Oregon Department of Agriculture has a limited duration statewide NPS coordinator funded as a pilot project with 319 funds provided through the Department of Environmental Quality. An additional year of funding for this position has been requested. Part of the duties of the position in 1991-92 will be to develop more stable resources for use in the Tualatin and other water quality limited basins.

In the short term, the Oregon Department of Agriculture and the cooperating agencies will work to pass appropriate proposed legislative initiatives to support the development of mechanisms to fund agricultural planning and implementation efforts in water quality limited basins.

If efforts to pass legislation fail, the Department, working with cooperating agencies, will continue to seek stable funding during the remainder of 1991 and 1992. Sources which will be explored include county transfer of funds for rural implementation efforts (which would provide funds to the Soil and Water Conservation Districts); formation of a special water quality management district that would have the ability to collect fees; extension of Unified Sewerage Agency's Surface Water Management fee program; and others as they are identified.

The possibility of the formation of a subdistrict within the present Soil and Water Conservation District area is being investigated. This mechanism might allow for the collection of revenue to fund rural water quality projects within the newly created district. In this case, both districts could not have mutual directors, and directors of the newly created subdistrict would need to be residents of that subdistrict. There is a potential legal conflict in having two districts serving the same purpose in the same area, though for a specific, limited duration project such as a water quality implementation project, this arrangement may be possible.

A stable funding source may be sought from the entire area which the current Soil and Water Conservation District serves, through the seeking of county-wide voter approval of a tax levy to support district operations. The district has made efforts in this area in the recent past, and was unsuccessful in obtaining voter approval.

There is also the possibility of the levying of assessments on a case-by-case basis against land receiving direct improvements for the benefit of water quality.

If by October of 1992, a stable funding mechanism has still not been identified, the Oregon Department of Agriculture will begin coordinating efforts with other agencies to introduce necessary legislation in the 1993 legislative session.

Potential Cost-Share, Grant, and Loan Sources of Funding

The following directory of potential funding sources for agricultural nonpoint source pollution activities lists federal and state sources, and may not be all-inclusive. Eligibility for these funds is on a competitive basis.

MULTI-PURPOSE FUNDS

Clean Water Act Section 319 (h) and (i) Grants
(Department of Environmental Quality, from EPA)

Type: Grants (local match is required).

Amount: \$550,000 allocated in Oregon 1990.

Purpose: To fund states' nonpoint source programs, including grants for nonpoint source implementation projects.

Eligibility: Public agencies, nonprofit organizations, and universities.

<u>Tasks for further investigation or application</u>	<u>Schedule</u>
Task 1: Prioritize NPS Plan implementation needs most suitable for 319 funds	1/91-1/93
Task 2: Assemble/write grant proposals	1/91-1/93

Likelihood of securing adequate funds from this source: The total amount of 319 funds available statewide for agricultural NPS efforts in 1990 was \$216,000. Future allocations are unknown. It is expected that the amount available for ag implementation efforts in the Tualatin Basin annually over the next three years would be a portion of this, possibly as much as 50%.

Deadlines: The Department of Environmental Quality deadline to submit a statewide application to EPA is generally mid-January. The Department will generally have a deadline for individual proposals in November.

- - - - -

Clean Water Act Section 201 (g) (1) (b) funds
(EPA)

Section 201 of the Clean Water Act gives each state's governor the discretion to set aside up to 20% of its EPA construction grant allotment for nonpoint programs. To date, all of Oregon's Section 201 capital has been left in a fund reserved for construction of water pollution control facilities.

AGRICULTURE

Agricultural Conservation Program
(U.S.D.A. Agricultural Stabilization and Conservation Service)

Type: Cost-sharing.

Amount: \$3,500 per individual; \$10,000 for group projects.

Purpose: To fund soil and water conservation measures on agricultural land to solve problems of point and nonpoint source pollution, soil erosion, energy consumption, and woodlands conservation.

Funds are distributed according to categories identified under the local Agricultural Stabilization and Conservation Service county committee plans.

Eligibility: Individuals, groups, and associations.

<u>Tasks for further investigation or application</u>	<u>Schedule</u>
Task 1: Contact landowners	1/91-
Task 2: Provide educational information on availability of these funds for cost-sharing on prioritized areas of treatment	1/91-
Task 3: Recommend project allocations to county ASC Committee	4/91-

Likelihood of securing adequate funds from this source: For 1991, \$2.9 million is available statewide for cost-sharing. A portion of this is expected to be available for cost-sharing of agricultural conservation measures in the basin. Exact amount available over the next three years is unknown.

Deadlines: Announced by the local Agricultural Stabilization and Conservation Service office periodically.

Conservation Reserve Program
(U.S.D.A. Soil Conservation Service)

Type: Economic incentives.

Amount: Variable. Limited to \$50,000 annually per participant, in cash or commodity certificates.

Purpose: To provide economic incentives to plant highly erodible cropland to permanent vegetative cover through 10-year contracts between landowners and U.S.D.A.

Eligibility: Land must be highly erodible as defined and described by U.S.D.A. Soil Conservation Service.

<u>Tasks for further investigation or application</u>	<u>Schedule</u>
Task 1: Coordinate with SCS to remain aware of new signup periods	1/91-
Task 2: Disseminate information about signup period	1/91-

Deadlines: Open only during publicly announced signup periods.

Hydrologic Unit Area Designation
(U.S.D.A. SCS, ASCS, Extension Service)

Type: Technical assistance, educational assistance, economic incentives.

Amount: Variable.

Purpose: To provide technical, educational, and financial assistance for water quality implementation efforts in an integrated basinwide approach.

Eligibility: Generally water quality limited areas.

<u>Tasks for further investigation or application</u>	<u>Schedule</u>
Funds for the Dairy-McKay Hydrologic Unit Area have been allocated.	

Likelihood of securing adequate funds from this source: The total amount sought for the Dairy-McKay Hydrologic Unit Area was \$4.1 million. This project was approved in December of 1990, and funds will become available over the life of the project, through 1995.

Irrigation and Drainage Association Loans
(Farmers Home Administration)

Type: Farmers Home Administration Loans.

Amount: No limits.

Purpose: To develop community irrigation, drainage, or other soil and water conservation facilities.

Eligibility: Associations of family farmers. (May be as small as three members.) The FHA can advise groups on how to form associations.

Deadlines: Ongoing.

Planning Conservation Grants
(Oregon Department of Agriculture)

Type: Grants.

Amount: Variable.

Purpose: To provide grants to Soil and Water Conservation Districts to develop conservation plans for on-the-ground projects.

Eligibility: Each Soil and Water Conservation District may apply subject to availability of funds.

Deadlines: Apply early in biennium.

Resource Conservation & Development Program
(U.S.D.A. Soil Conservation Service)

Type: Grants.

Amount: Each Resource Conservation & Development area may apply for \$25,000-50,000 per year.

Purpose: To accelerate resource projects and programs in multi-county areas as a base for economic development and environmental protection.

Eligibility: These programs are carried out in areas designated by the Secretary of Agriculture. The Tualatin Basin lies within the Northwest Oregon Resource Conservation & Development area.

<u>Tasks for further investigation or application</u>	<u>Schedule</u>
Task 1: Present appropriate project concepts	3/91-
Task 2: Assemble project proposals	5/91-

Deadlines: Open.

Rural Clean Water Program
(U.S.D.A. Agricultural Stabilization and Conservation Service)

Type: Financial and technical assistance.

Amount: Maximum cost-share is 75%.

Purpose: To provide financial and technical assistance to agricultural landowners and operators in selected areas in the U.S. to address significant agriculture related water pollution and water quality programs.

Eligibility: Individuals, Indian tribes, and irrigation Districts in approved areas must demonstrate a critical water quality problem and have an approved water quality plan. Practices must provide long-term community-wide benefits.

Deadlines: Open.

- - - - -

Soil and Water Conservation District Administration Grants
(Oregon Department of Agriculture)

Type: Grants.

Amount: Varies with legislative appropriations. \$1,888 per district for 1989 and 1990.

Purpose: To provide grants to local Soil and Water Conservation Districts for administration.

Eligibility: Each Soil and Water Conservation District is automatically eligible.

Deadlines: Automatic award.

- - - - -

Soil and Water Loans
(Farmers Home Administration)

Type: Farmers Home Administration Guaranteed and Insured Loans.

Amount: Averages \$19,000.

Purpose: To help individual farmers and ranchers develop, conserve, and properly use their land and water resources, and abate pollution. Can be used to install drainage, waste disposal and erosion control facilities, improve water supply, and for certain soils, improvements such as fertilization, seeding, sodding, and pasture development.

Eligibility: Farm and ranch owners/tenants, cooperatives, corporations, partnerships.

Deadlines: Ongoing.

**Special Water Quality Project Funds
(ASCS)**

Type: Cost-sharing.

Amount: Up to \$35,000 per operation for Long Term Agreements.

Purpose: To provide financial cost-share assistance on water quality projects.

Eligibility: Agricultural operators within an identified geographic area.

<u>Tasks for further investigation or application</u>	<u>Schedule</u>
Task 1: Prioritize CAFO treatment needs	1/91-1/92
Task 2: Recommend project to ASCS	1/92
Task 3: State ASCS review and submittal	4/92

Likelihood of securing adequate funds from this source: The total amount of funds available statewide from this source in 1990 was \$916,900, applied to two project areas. It is expected that some funds could be released in future years for CAFO implementation in the Tualatin Basin. However, with the ASCS funding for cost-sharing which is going into the basin through the Dairy-McKay HUA, availability of ASCS Special Water Quality Project Funds for projects in the Tualatin Basin may be limited.

- - - - -

**Watershed Protection and Flood Prevention Grants "PL-566 Program"
(U.S.D.A. Soil Conservation Service)**

Type: Technical assistance and grants.

Amount: Varies. Farmers Home Administration has loans which augment this program. There are very specific application processes for this program, and funds are limited.

Purpose: For the planning and execution of projects to protect, develop, and utilize the land and water resources in certain watersheds which have developed plans under the Small Watershed Protection and Flood Prevention Act.

Eligibility: State agencies, cities, counties, tribes, special purpose districts and other public or non-profit bodies. Apply through the local Soil and Water Conservation District.

Deadlines: Ongoing.

FISHERIES, STREAM, AND WETLANDS ENHANCEMENT

Anadromous Fish Conservation Grants
(U.S. Fish and Wildlife Service)

Type: Grants.

Amount: \$45,000-60,000.

Purpose: For planning, inventory, research, supplements to natural production, fish passage facilities, and habitat improvement.

Eligibility: State, local, nonprofit and individual entities with fishery capabilities; educational institutions; and Indian tribes.

<u>Tasks for further investigation or application</u>	<u>Schedule</u>
Task 1: Evaluate availability and criteria for these grant funds	4/91-
Task 2: If applicable, assemble/write proposals	
Task 3: If applicable, submit proposals	
<u>Likelihood of securing adequate funds from this source:</u> Unknown at this time.	

Deadlines: Ongoing.

General Habitat Improvement
(Oregon Department of Fish and Wildlife)

Type: Grants.

Amount: Variable

Purpose: To develop or enhance habitat for wildlife on private and public lands.

Eligibility: Private and public lands.

<u>Tasks for further investigation or application</u>	<u>Schedule</u>
Task 1: Evaluate availability and criteria for these grant funds	4/91-
Task 2: If applicable, assemble/write proposals	
Task 3: If applicable, submit proposals	
<u>Likelihood of securing adequate funds from this source:</u> Unknown at this time.	

Deadlines: Subject to availability of funds.

**Governor's Watershed Enhancement Board
(GWEB)**

Type: Grants.

Amount: Unrestricted.

Purpose: Watershed restoration, improvement, enhancement, and management. Emphasis on implementation, interagency coordination, and voluntary effort.

Eligibility: Public and private organizations, and individuals. Also, each Soil and Water Conservation District may apply for and automatically receive \$2,000 per biennium.

<u>Tasks for further investigation or application</u>	<u>Schedule</u>
Task 1: Evaluate and prioritize areas for stream- bank rehabilitation	1/91-1/92
Task 2: Assemble/write proposals	9/91-9/92
Task 3: Submit proposals	2/92,2/93

Likelihood of securing adequate funds from this source: Awarding of these grants is on a competitive basis, and well developed proposals which meet grant criteria stand a good chance of qualifying for funds.

Deadlines: Proposals due between July 1 and October 31 annually.

Habitat Improvement Conservation Reserve Program
(Oregon Department of Fish and Wildlife-U.S.D.A. Agricultural Stabilization and Conservation Service)

Type: Cost-share.

Amount: Variable

Purpose: To assist farmers with plans for the Conservation Reserve Program to include a wildlife habitat improvement component on land which has potential wildlife improvement benefits.

Eligibility: Private land eligible for the Conservation Reserve Program. Eligible practices include forage seeding, fertilization, tree and shrub planting, water development, and vegetation control.

<u>Tasks for further investigation or application</u>	<u>Schedule</u>
Task 1: Evaluate availability and criteria for these cost-share funds	4/91-
Task 2: Contact landowners	
Task 3: Provide educational information on availability of these funds for cost-sharing on prioritized areas of treatment	
Task 4: Recommend project allocations to county ASC Committee	

Deadlines: Restricted to remaining opportunities for CRP signups.

- - - - -

Wetlands Restoration
(U.S. Fish and Wildlife Service)

Type: Grants and biological and engineering assistance.

Amount: Variable.

Purpose: To restore and/or enhance wetlands on private lands.

Eligibility: Private landowners.

Deadlines: Open.

OTHER SOURCES

Oregon Youth Conservation Corps
(All state agencies)

Type: Labor.

Purpose: To provide labor for projects.

Eligibility: Cities, counties, tribes, special purpose districts, and other public entities.

Deadlines: None.

EPA grants for environmental education programs

<u>Tasks for further investigation or application</u>	<u>Schedule</u>
Task D.1: Evaluate availability and criteria for these grant funds	2/91-4/91
Task D.2: If applicable, assemble/write proposals	4/91-
Task D.3: If applicable, submit proposals	4/91-

Likelihood of securing adequate funds from this source: The total amount of funds available in the U.S. in 1990 is \$5 million, designated to provide educational institutions, nonprofits, and state and local governments with funding for environmental education programs. At this point, it is unknown whether any of these funds might be available for agricultural education programs in the Tualatin Basin.

State Pollution Control Tax Credits

<u>Tasks for further investigation or application</u>	<u>Schedule</u>
Individual operators submit applications	3/91-

Likelihood of securing adequate funds from this source: Secured. These provisions sunset in 1995.

V. PROJECT SCHEDULE

In association with each objective listed under Section I, Chapter III, Control Strategies-Objectives, a project schedule has been estimated and is shown here. The listing identifies tasks and schedules necessary to achieve the objectives.

* **OBJECTIVE 1: Implement the approved Dairy-McKay Hydrologic Unit Area (HUA) Proposal**

<u>Task</u>	<u>Schedule</u>
Task 1.1: Develop an information and education plan to ensure full public participation and support	1/91-10/91
Task 1.2: Hold 4 public meetings within study area for promotion, education, and information	1/91-9/91
Task 1.3: Establish 2 promotional tours and demonstrations of resource systems and BMPs	1/91-9/91
Task 1.4: Locate and prioritize livestock units needing assistance	1/91-1/92
Task 1.5: Survey HUA landowner's current knowledge of animal waste management practices	3/91-3/92
Task 1.6: Develop specifications and worksheets for balancing nutrient production with crop needs for waste utilization planning	6/91-6/92
Task 1.7: Plan and install on-farm waste management and utilization systems	6/91-6/95
Task 1.8: Identify irrigation water management techniques which positively impact seasonal water quality	3/91-9/92
Task 1.9: Refine soils information using area maps, GIS systems, and field reconnaissance	1/91-10/92
Task 1.10: Locate and prioritize erosion and sediment problem areas	1/91-1/92
Task 1.11: Design and evaluate economically sound resource systems and BMPs	Ongoing
Task 1.12: Review and approve cost-share practices list and estimate the level of implementation expected	Ongoing
Task 1.13: Develop and implement conservation plans	Ongoing
Task 1.14: Locate and prioritize road and streambank erosion areas needing treatment	1/91-1/93
Task 1.15: Inventory riparian condition and prioritize areas needing treatment	1/91-1/93
Task 1.16: Plan and install BMPs for riparian zone improvements	6/91-9/95
Task 1.17: Plan and implement BMPs for roadside erosion control	6/91-9/95

Potential Funding Sources for OBJECTIVE 1: SCS, ASCS Hydrologic Unit Area Funds

Budget limitations on OBJECTIVE 1: The full \$4.1 million for

implementation of this proposal has been appropriated, and will become available in stages as implementation progresses.

* **OBJECTIVE 2: Verify compliance of Confined Animal Feeding Operations with provisions of the existing permitting process**

<u>Task</u>	<u>Schedule</u>
Task 2.1: Inventory and map all CAFO operations	3/91-7/91
Task 2.2: Contact operators	6/91-10/91
Task 2.3: Conduct information and education campaign	10/91-12/91
Task 2.4: Site visit and evaluation of waste management systems	6/91-10/91
Task 2.5: Prioritize CAFO operations for treatment	6/91-12/91
Task 2.6: Create contracts with individual landowners	6/91-6/93
Task 2.7: Design and formulate waste management and utilization systems and plans	6/91-12/93
Task 2.8: Provide technical assistance during installation of systems and plans	8/91-12/94

Potential Funding sources for OBJECTIVE 2: DEQ, ODA general funds; SCS technical assistance; ASCS ACP cost-share funds; OSUES funds

Budget limitations on OBJECTIVE 2: Extent of accomplishment of Task 2.4 is limited by funds available statewide from agency budgets in the current biennium.

* **OBJECTIVE 3: Verify container nursery compliance with provisions of the approved Container Nursery Irrigation Water Management Plan**

<u>Task</u>	<u>Schedule</u>
Task 3.1: Conduct information and education program	3/91-3/93
Task 3.2: Receive letter of intent from individual nurseries	7/91
Task 3.3: Verify lack of discharge on those operations choosing that option within the strategy	8/92-10/92
Task 3.4: Review management plans for container nurseries making modifications to systems	2/92-5/92
Task 3.5: Verify systems installation	6/93

Potential Funding sources for OBJECTIVE 3: Container nursery plan review fees and ODA operating funds

Budget limitations on OBJECTIVE 3: The Oregon Department of Agriculture is currently seeking authority from the legislature which would allow collection of fees from container nursery operators for implementation of this objective. If this authority is not granted, this aspect could not go forward without funding from another source.

- * **OBJECTIVE 4: Promote sound irrigation water management and assure no loss of nutrients from land applied sewage treatment plant sludge and effluent**

<u>Task</u>	<u>Schedule</u>
Task 4.1: Create and sign Memorandum of Agreement with Unified Sewerage Agency	5/91
Task 4.2: Review current and new sludge application contracts	5/91-
Task 4.3: Review future effluent contract applications and approve as appropriate	1/92-

Potential Funding sources for OBJECTIVE 4: Sludge and effluent contract review fees

Budget limitations on OBJECTIVE 4: Workable memorandum of agreement between both parties

- * **OBJECTIVE 5: Prioritize subbasins outside of Dairy-McKay HUA for treatment based on exceedance of assigned load allocations for phosphorus**

<u>Task</u>	<u>Schedule</u>
Task 5.1: Evaluate current monitoring data	1/91-3/91
Task 5.2: Make preliminary prioritizations	3/91-5/91
Task 5.3: Refine monitoring process for 1991, 1992, and 1993 sampling season to include streamflow data at points defining ag/forestry an ag/urban boundaries	3/91-5/91
Task 5.4: Evaluate 1991 season monitoring data	11/91-12/91
Task 5.5: Refine preliminary prioritizations	12/91-1/92

Potential Funding sources for OBJECTIVE 5: ODA, USA, DEQ existing programs

Budget limitations on OBJECTIVE 5: The costs associated with achieving this objective are to be borne by existing agency budgets and staff, and volunteer efforts.

- * **OBJECTIVE 6: Identify and prioritize significant phosphorus contributing agricultural nonpoint sources of water pollution from cropland erosion in the prioritized subbasins outside of Dairy-McKay HUA**

<u>Task</u>	<u>Schedule</u>
Task 6.1: Rank soils based on erosion potential	1/91-5/91
Task 6.2: Identify cropping practices with greatest erosion potential	1/91-5/91
Task 6.3: Rank soils with greatest potential to	

release P instream	6/92-8/92
Task 6.3: Prioritize cropland sites for treatment based on potential sediment P contribution and erosion potential	1/91-12/92

Potential Funding sources for OBJECTIVE 6: Existing SCS staff; SCS funds for lab soils study; EPA Section 319 grants

Budget limitations on OBJECTIVE 6: Task 6.3 is dependent on approval of funding for the lab soils study through SCS (discussed in Control Strategies/Erosion Reduction section in Section I., Chapter 3.)

Extent of achievement of Task 6.4 is dependent on funding for a technician and support of the position. A minimal amount of prioritization could be carried out with existing resources and volunteer efforts.

- * OBJECTIVE 7: Identify and prioritize significant P contributing agricultural nonpoint sources of water pollution from streambank erosion in the prioritized subbasins outside of Dairy-McKay HUA

<u>Task</u>	<u>Schedule</u>
Task 7.1: Inventory streambank erosion sites	1/91-1/92
Task 7.2: Rank soils with greatest potential to release P instream	6/92-8/92
Task 7.3: Prioritize streambank erosion sites for treatment based on potential P contribution and severity of erosion	1/91-12/92

Potential Funding sources for OBJECTIVE 7: EPA Section 319 grants; SCS soils study funds

Budget limitations on OBJECTIVE 7: Tasks 7.1 and 7.3 are dependent on funding for a technician and support of the position. A minimal amount of inventorying and prioritization of sites could be undertaken with existing resources and volunteer efforts. Task 7.3 is dependent on approval of funding for the lab soils study through SCS (discussed in Control Strategies/Erosion Reduction section in Section I., Chapter 3.)

- * OBJECTIVE 8: Establish upland erosion control demonstration sites on basin-representative crops and soils which are especially susceptible to erosion to publicize installation, demonstrate effectiveness, and promote adoption

Task 8.1: Contact potential cooperators	4/91-6/91
Task 8.2: Write contracts with cooperators	6/91-8/91
Task 8.3: Create conservation plans	6/91-3/92
Task 8.4: Install BMPs	8/91-8/92
Task 8.5: Conduct educational campaign/tours	10/91-10/93

Potential Funding sources for OBJECTIVE 8: EPA Section 319 grants

Budget limitations on OBJECTIVE 8: Achievement of this objective in the time frame indicated and to the extent necessary for adequate and broad demonstration is dependent on receipt of adequate funding for technical assistance and support of the position.

- * OBJECTIVE 9: Promote the adoption of BMPs and RMSs for erosion control on prioritized cropland outside of Dairy-McKay HUA

<u>Task</u>	<u>Schedule</u>
Task 9.1: Contact landowners	4/91-12/92
Task 9.2: Conduct information and education program	8/91-12/92
Task 9.3: Create contracts with individual landowners	4/91-
Task 9.4: Design and formulate conservation plans for erosion control	6/91-
Task 9.5: Install and utilize BMPs and RMSs	8/91-

Potential Funding sources for OBJECTIVE 9: ASCS ACP cost-share funds; SCS technical assistance; EPA Section 319 funds; OSUES staff; landowners

Budget limitations on OBJECTIVE 9: Extent of accomplishment of all tasks depends on resources available through ASCS, staffing time available at SCS and OSUES, and receipt of adequate funding for technical assistance

- * OBJECTIVE 10: Establish a streambank erosion control demonstration area at a site representative of others in the basin to publicize installation of BMPs, demonstrate their effectiveness, and promote their adoption

<u>Task</u>	<u>Schedule</u>
Task 10.1: Contact potential cooperators	10/90
Task 10.2: Write contracts with interested landowners	4/91-6/91
Task 10.3: Design control measures	6/91-8/91
Task 10.4: Installation of BMPs and structural measures	8/91-8/92
Task 10.5: Conduct information and education campaign and tours of site	10/91-10/93

Potential Funding sources for OBJECTIVE 10: EPA Section 319 grants, GWEB grants

Budget limitations on OBJECTIVE 10: Achievement of this objective in the time frame indicated and to the extent necessary for adequate and broad demonstration is dependent on receipt of adequate funding for technical assistance and support of the position.

- * OBJECTIVE 11: Promote the adoption of cost effective BMPs for protection of prioritized sites of streambank erosion outside of Dairy-McKay HUA

<u>Task</u>	<u>Schedule</u>
Task 11.1: Contact landowners	1/91-6/92
Task 11.2: Conduct information and education program	4/91-12/92
Task 11.3: Create contracts with interested landowners	8/91-
Task 11.4: Obtain necessary permits	1/91-
Task 11.5: Create and engineer streambank erosion control plan	8/91-
Task 11.6: Install streambank erosion control measures	10/91-

Potential Funding sources for OBJECTIVE 11: ASCS ACP cost-share funds; SCS technical assistance; EPA Section 319 grants; OSUES staff; landowners

Budget limitations on OBJECTIVE 11: Extent of accomplishment of all tasks depends on resources available through ASCS, staffing time available at SCS and OSUES, and receipt of adequate funding for additional technical assistance

- * OBJECTIVE 12: Promote the adoption of Recommended Practices for Phosphorus Management to Protect Water Quality through a coordinated information and education campaign.

VI. EDUCATIONAL ACTIVITIES

Education leads to understanding and appreciation of the need for nutrient management and conservation practices, expanding conservation efforts and increasing participation in conservation programs. Education also helps to spread the word to others, as individuals who are committed to practicing conservation are the best salesmen of conservation.

To achieve a high level of understanding of the water quality issues and need for action, a comprehensive information and education program will be developed by the Soil and Water Conservation District to heighten the awareness levels of the agricultural community and the general population regarding the issues of water quality in the Tualatin Basin, and to aid in the overall effort to control nonpoint source pollution at its source.

The Soil and Water Conservation District plans to cooperate in these broad scale activities, and expects to see significant progress in raising the awareness levels of the public. There are issues of more specific interest to the agricultural/rural community, however, on which the district will focus.

The district will inform and educate the public regarding the agricultural/rural role in pollution of the Tualatin and its tributaries, the seriousness of the problem, how quality of life and local economics are affected, and actions which can be taken to reduce or eliminate pollution using a variety of approaches. The district will also use informational and educational tools to clarify its role in pollution abatement, and to explain the need for district funding to support its leadership role. These information and educational tools include:

1. Newsletter. Periodic newsletters can carry informative articles of local interest and news of developments. Descriptions of Best Management Practices and ways to get technical and cost-sharing assistance will be featured.
2. Brochures and Pamphlets. Specific subjects and audiences can be targeted to focus on issues and concerns. More detailed Best Management Practice descriptions can be the subjects of individual pamphlets.
3. Mass Media. Articles and editorials will be prepared for local newspapers. Public access channels on local cable television can be used to air locally produced programs and appropriate commercially produced features. The district will promote the concept of an investigative reporter doing a series of reports on the issues, actions, and solutions.
4. Workshops. The district views workshops as an effective method to promote a better understanding of water quality enhancing activities. Workshops will be scheduled to discuss both general water quality issues and specific Best Management Practice costs, benefits, installation methods, and maintenance.
5. Individual Recognition. Awards and public recognition will be given to individuals who make significant contributions to the water quality program. These can include farmers who are particularly active in

installing Best Management Systems, teachers who are effectively promoting water quality appreciation in the schools, and program managers or staff who are taking the lead in getting water quality practices installed.

6. Roadside Signs. Signs along major streets and county roads, which draw the public's attention to water quality improvement projects, monitoring sites, and other high interest features, will be erected.
7. Civic Organizations. The district will develop a list of speakers and topics suitable for use by Rotary International, Lions Club, garden clubs, church groups, and any other interested local civic or professional organizations. Speakers are expected to be very effective in conveying the issues and solutions to the concerned public.
8. Washington County Fair. The district will explore the possibility of developing a fair booth which highlights the water quality issue in the Tualatin Basin.
9. School Programs. The district recognizes that one of the most effective ways to develop a long term and lasting appreciation for water quality issues is through the school system. The district plans to investigate the mechanics and costs for sponsoring teacher participation in water quality workshops, providing teaching materials and aids to the schools, and otherwise fostering a high level of teacher awareness and effectiveness in curriculum development.
10. Demonstration Areas. The district plans to target its planning and installation of Best Management Systems in areas where the problems are relatively more severe, highly visible, and/or where actions are expected to yield more visible and dramatic results. Special funding to support this concentrated targeting will be pursued. Focusing the district's resources and public's awareness in this manner is seen as an effective way to establish a much higher degree of understanding and acceptance of water quality improvement activities.
11. Field Trips. Interested groups will be taken around the basin periodically to study the various water problems and actions. The proposed demonstration area(s) will be a featured stop on these types of tours. Students, farmers, civic leaders, and program managers are examples of the kinds of tour groups which are anticipated.
12. Mobile Display. The district hopes to be able to develop a graphic and informative display which can be placed in public building high traffic areas. This mobile display can be used to focus on issues or interest groups.

The information and education activities described above can be accomplished by the Soil and Water Conservation District independently, or in cooperation with the entities leading the urban and forestry nonpoint pollution control programs. Some of the activities, such as school programs, should be comprehensively planned considering all aspects of water quality, and can be cost shared with the other groups. Some activities might be undertaken independently. The district will actively cooperate with the other action agencies to maximize effectiveness of the program and achieve cost savings where possible.

VII. PUBLIC INVOLVEMENT

The Washington County Soil and Water Conservation District initiated its effort to develop a plan to reduce nonpoint source pollution from agricultural lands by holding a series of public meetings. Concerned citizens were given the opportunity to voice their views and make recommendations. A general public meeting was held on January 11, 1989, with 35 people in attendance. As a result of this early meeting, four Citizens Advisory Committees were organized. Each is comprised of local concerned citizens and chaired by members of the district's board of directors.

These committees met to discuss the various rural nonpoint pollution problems, and to develop pollution control strategies. Lists of specific potential pollution producing activities were drawn up and Best Management Practices to reduce pollution were identified. These are included in Table 7. Best Management Practices and action items recommended by individual committees may be applicable to all nonpoint concerns. The committees will continue to be active in reviewing these lists periodically and making recommendations to the district.

**Table 7 Citizens Advisory Committees
action-BMP recommendations**

Best Management Practice/ Action Item	Committee			
	Ag	Nursery	Urban	Wildlife, Riparian, Streambank
Nutrient Management				
Balance water/fertilizer needs		X		
Slow release fertilizers/ less liquid feed		X		
Reduce amounts/more freq. applications		X		
Top dressing		X		
Types of fertilizer		X		
Soil and tissue testing periodically		X		
Fertilizer application				X
Use nutrients only as directed on the label	X			
Band herbicides so aisles can be planted to perm. cover	X			
Band fertilizers	X			
Side dressing	X			
Establish sod borders	X			
Filter Strips				
Use filter strips in nurseries		X		
Cover and Green Manure Crops				
In flood plains	X			
On hillsides	X			
Cover crops and plantings				X

Table 7 (continued)

Best Management Practice/ Action Item	Ag	Nursery	Urban	W,R, & S
Crop Residue Use				
Use of some type of residue straw, sawdust, etc.		X		
Straw mulch on surface 1000-1500 #/ac.	X			
Organic matter in soil	X			
Mix straw and soil together in top 6"	X			
Keep cover on land to be planted in the spring	X			
Strip Cropping				
Use of strip farming	X			
Stubble Mulching				
Minimum tillage/no tillage	X			
Contour Farming				
Use of contour planting	X	X		
Work ground according to the contour	X			
Keep row length short	X			
Terraces				
Use of terracing		X		
Water and Sediment Control Basins				
Evaporation ponds		X		
Collect/treat/discharge runoff		X		
Use of sediment basins		X		
Particulate matter control				X
Surface Drainage				
Sod waterways	X			
Chiseling & Subsoiling				
Break up hardpans	X			
Irrigation Water Management				
Drip irrigation	X	X		
Reduced timing-less H ₂ O	X	X		
Ebb-flow (flood irrig.)		X		
Know soil type/infilt rate		X		
Monitor H ₂ O loss-evap. plan		X		
Water conservation		X		
Water management	X	X		
Apply at perc. rates shorter sets more often	X			
Monitor soil moisture	X			
Irrigation scheduling	X			
Appropriate Irrigation System				
Well engineered/even water	X	X		
Irrigation Tailwater Recovery				
Sprinkle runoff on vacant land or other crops		X		
Recycle runoff on container stock		X		

Table 7 (continued)

Best Management Practice/ Action Item	Ag	Nursery	Urban	W,R, & S
Water Table Control				
Subsurface water management	X	X		
Structures for Water Control				
SCS approved ponds and dams				X
Pesticide Management				
Container disposal				X
Proper storage				X
Reduce county roadside spray			X	
Use vegetation or rock lining of ditches			X	
Do not spray unless shoulder adequate			X	
Mow or chop in lieu of spraying			X	
Homeowner responsible for area in front of property			X	
Use minimum maintenance			X	
Animal Waste Lagoons				
CAFO	X			
Stop animal nutrient resources from moving into drainages	X			
Adequate capacity	X			
Keep water clean	X			
Stop nutrient resources from moving into stream	X			
Water Utilization				
Know conditions on the farm and develop nutrient system to minimize potential pollution	X			
Use at proper times	X			
Fencing				
Domestic animal stream entry				X
Wildlife Wetland Habitat Management				
Leave area alone				X
Demonstration projects				X
Wetland manipulation				
proper species planting				X
Nesting boxes				X
Wetland Development				
Use of artificial wetlands		X		
Groundwater recharge				X
Nutrient polishing				X
Stream Channel Stabilization				
Removal of log jams and debris				X
Fenced barrier strips for streambank protection				X
Buffer strips				X
Vegetative planting				X
Gabions				X
Turbulence generator (gabions)				X
Livestock crossings				X

Table 7 (continued)

Best Management Practice/ Action Item	Ag	Nursery	Urban	W,R, & S
Floodplain Protection				
No fill or building				X
Recreation trails				X
Onsite Domestic Sewage Disposal				
Septic tank maintenance program			X	
Urban Storm Drainage				
Maintain lines and ditches			X	
Develop surface and subsurface drainage ordinances			X	
Seeding and fertilizer			X	
Sediment catchments			X	
Mulching			X	
Use technical guides			X	
Code enforcement			X	
Reduce Chemical Runoff				
Follow label instruction			X	
Do not overapply			X	
Time applic. to reduce runoff			X	
Reduce runoff by better pre-planning			X	
Detailed hydrology of entire watershed			X	
More greenbelts or natural areas			X	
Flood control/water retention structures			X	
Solid Waste Site Maintenance				
Shadybrook and Franks Recontour			X	
Buffer zone-plant fast growing vegetation			X	
Solid Waste Site Monitoring				
Open sites-continue DEQ testing			X	
Closed sites-monitor upstream and downstream of sites			X	
Shadybrook and Franks			X	
Strassel Road			X	
Spot monit. others			X	
Soil Erosion/Sediment Ordinances				
Similar ordinance in each city			X	
Three step plan to implement Analysis/need for control			X	
Approve/disapprove plans			X	
Onsite inspection			X	
Enforce evenly and rigidly			X	
Develop incentive program for developers, consultants			X	
Update urban cons. guide			X	
Develop strong I & E program			X	
Involve volunteers			X	

Table 7 (continued)

Best Management Practice/ Action Item	Ag	Nursery	Urban	W,R, & S
Develop alternate uses for yard debris			X	
Roadside Ditch Stabilization				
Stabilize waterways			X	
Grassed waterways			X	
Rock riprap			X	
Gunite, concrete, or other liners			X	
Public Participation			X	
Encourage homeowners, landowners to participate			X	
Encourage volunteers to assist			X	
Additional Concerns				
Research		X		
Education		X		
Use of ground covers		X		
Test boring ancient landfills				X
Unauthorized dumping				X
Available transfer sites				X
Dumping sites				X
FSA 1985 highly erodible lands				X
Have a conservation management plan	X			
Use of flotation spraying equipment	X			
Plant early to get good fall growth	X			
Keep animals out of waterways				X
Guidelines addressed by USDA	X			

A general rural nonpoint source pollution control plan review process commenced July 1, 1989. Notice of the availability of the draft plan was conveyed to the public via newspaper, radio, and television announcements. Copies were sent to members of the Citizens Advisory Committees, local, state and federal agencies, and other appropriate individuals and entities. Copies were made available at the district's office in Hillsboro. Comments were accepted in writing, and a public meeting was held on July 24, 1989, to receive oral comments. The final plan will reflect these comments.

A coordinating committee consisting of representatives of grower groups from a broad spectrum of agriculture in the Tualatin Valley, the Washington County Soil and Water Conservation District, the Department of Environmental Quality, the Oregon Department of Agriculture, the Oregon Department of Fish and Wildlife, the Oregon State Department of Forestry, the Soil Conservation Service, the Agricultural Stabilization and Conservation Service, and the Oregon State University Extension Service was created in August 1990, in part, to provide further input for the plan. The committee's work is reflected in this plan.

VIII. PROJECT REPORTING

A monthly progress report will be submitted by the Oregon Department of Agriculture to the Tualatin Basin Coordinator at the Department of Environmental Quality headquarters. The report will include information on instream water quality monitoring; completion of plans; adoption, implementation, enforcement, and evaluation of erosion control ordinances, rules, and Best Management Practices; and status of implementation activities.

An annual report on implementation progress will be prepared by the Local Management Agencies and presented at a plan review session held in midwinter of each year.

IX. PROJECT EVALUATION

Two approaches will be used to evaluate the progress and success of the agricultural implementation efforts in the basin. One approach will involve the assessment of changes in land use practices and reductions in pollutant loads as a result of the project. The other approach will be the measurement of water quality changes over time.

Changes in Land Use Practices and Pollutant Loads

Nonpoint sources of pollution have been degrading water quality for a long period of time and changes in water quality from control of the sources will occur gradually. Because of this, there is a need for an evaluation procedure that will indicate progress before the actual changes in water quality can be measured.

The base line conditions of the watershed with respect to nonpoint sources of pollution will be documented throughout the inventory process. Changes in these conditions will be documented throughout the project with the use of tracking forms. Each time a cost-share agreement is signed, the changes in upland soil loss, discharge or runoff phosphorus load, or streambank erosion will be recorded on the tracking sheet by the Soil and Water Conservation District. This will be done for practices that are cost-shared through existing programs as well as those known practices that have been implemented and have not been cost-shared. These tracking sheets will be turned in to the Oregon Department of Agriculture on an annual basis or upon request by the Department.

This evaluation effort has two benefits. First, as mentioned above, it allows for an indication of the progress of the project before changes in water quality are apparent. Second, the evaluation will provide evidence, to the management agencies, on which water bodies are most likely to show changes as a result of the level of practice installation in the respective subwatersheds.

Monitoring

The Washington County Soil and Water Conservation District will continue to participate in an integrated basinwide comprehensive monitoring plan developed by the Washington County Water Management Committee Watershed Monitoring Subcommittee. The master plan is divided into three sections: Urban, Rural, and Forestry. The district's rural component includes installation of monitoring stations that are coordinated with stations established by the Department of Environmental Quality, Unified Sewerage Agency, and the Oregon State Department of Forestry, to reduce the costs of sampling and laboratory analysis. The district's monitoring sites are located and operated to provide streamflow (quantity) and/or water quality data. Water samples are gathered for laboratory analysis, and analyses are performed to determine nutrient concentrations. Other optional tests can be made. The potential field and laboratory test list appears in Table 8.

The entire monitoring effort is designed to acquire information with which to better define or verify problems related to nonpoint source pollution,

assist in their resolution, and indicate the effectiveness of corrective action.

Monitoring of rural areas must be refined to allow establishment of the classes and amounts of pollutants entering streams from the upper reaches of the watershed (forested areas above the agricultural lands), and exiting from rural zones. Thus, baseline conditions can be established, contribution from rural nonpoint sources can be quantified, and problem areas can be identified. As Resource Management Systems are designed and installed, the effectiveness of these measures can be determined by comparison of the pre-treatment data with post-treatment data. The knowledge gained via this temporary and targeted monitoring effort will be used to evaluate and revise the numbers and locations of permanent monitoring sites.

Table 8 Water quantity and quality observations

Parameter	Field Observation	Laboratory Test
Streamflow	*	
Turbidity	*	*
Suspended sediments	*	*
Temperature	*	*
Specific conductance	*	*
Dissolved oxygen	*	*
Dissolved oxygen, saturated	*	*
Biochemical oxygen demand		*
Ammonia nitrogen, NH ₃ + NH ₄		*
Nitrites		*
Nitrates		*
Total Kjeldahl nitrogen		*
Orthophosphates		*
Total phosphates		*
Fecal coliform bacteria		*
pH	*	*

Data obtained from the monitoring network will be incorporated into the cooperative Washington County Water Management Committee data management center. Costs of supporting the data base and use of analytical tools will be minimized through use of this combined facility as opposed to the district's development of stand alone capabilities.

Plan Review

The Oregon Department of Agriculture will conduct periodic reviews of the plan and results of actions taken to determine whether changes in plan implementation are needed. Persons and agencies responsible for implementation of the plan will be encouraged to attend these reviews. The agricultural community and the general public will be invited to attend and participate.

The Oregon Department of Agriculture will conduct an annual meeting in midwinter each year, at which the previous year's actions and results will be reported and discussed, the implementation plan can be reviewed, and suggestions can be made whether changes in the plan are needed. A report of this meeting will be submitted by the Oregon Department of Agriculture to all cooperating agencies, and a subsequent meeting of all cooperating agencies will be held the following month to recommend mid-course program corrections to the implementation plan.

The first review meeting held in January, 1990 dealt with several items of immediate concern, namely:

1. Results of monitoring during the 1989 field season.
Concentrations of total phosphates in excess of the target loading capacities, found by grab sampling in the downstream to upstream mode, were used to determine where future efforts need to be focused. Permanent monitoring station network design may need to be adjusted to improve the effectiveness of monitoring activities.
2. Information and education activities.
Evaluation of early efforts and the progress in development of cooperative activities with other action agencies were discussed. The 1990 actions were formulated based on 1989 experience and results.
3. Funding of the Soil and Water Conservation District's nonpoint source pollution control plan.
The progress toward securing a permanent and stable funding mechanism was a priority discussion item.
4. Inventory of Tualatin Basin physical characteristics.
Initial efforts to inventory dairies, nurseries, rural septic systems, and other potential sources of pollution were reviewed. Progress in developing Geographic Information System capability were discussed and strategies formulated as applicable.
5. Staffing and work assignments.
The ability of the district to employ staff to carry out the regular managerial and technical duties necessary to implement this plan to its fullest will be dependent upon success in obtaining funds. Plans were developed consistent with item 3, above.

Subsequent annual review meetings will follow the same general format, but with variations in response to progress and developments in the intervening years. Adjustments and redirection of annual areas of emphasis will be made as required to keep the plan up to date as an accurate reflection of current conditions, philosophies, and policy.

X. SIGNED AGREEMENTS

Existing Agreements

1. A Memorandum of Agreement dated August 4, 1989 exists between the Oregon Department of Agriculture and the Department of Environmental Quality, which sets forth the roles and responsibilities of both agencies in managing and implementing a statewide nonpoint source pollution control program for agriculture.
2. A Memorandum of Agreement exists between the Soil and Water Conservation District and the Soil Conservation Service which sets forth the roles and responsibilities of both agencies in providing technical assistance to individual agricultural operations.

Agreements Needing to be Developed

A number of interagency agreements will be necessary for the implementation of this plan:

1. Agreements between the affected Soil and Water Conservation Districts and the Oregon Department of Agriculture to set forth the roles and responsibilities of both agencies in managing and implementing the Tualatin River Basin Agricultural Nonpoint Source Pollution Control Plan within the basin.
2. An agreement between the Oregon Department of Agriculture, the Washington County Soil and Water Conservation District, and Unified Sewerage Agency to set forth the roles and responsibilities of these agencies in regard to rural activities in urban areas, and urban activities in rural areas.
3. An agreement between the Oregon Department of Agriculture, the Washington County Soil and Water Conservation District, and Unified Sewerage Agency to set forth the roles and responsibilities of these agencies in regard to land application of sewage treatment plant sludge and recycled wastewater.
4. An agreement between the Washington County Soil and Water Conservation District and the Washington County Land Use and Transportation Department to set forth the roles and responsibilities of both agencies in regard to control and prevention of roadside erosion.

Other agreements between these and other agencies may need to be developed during the course of the implementation of this plan.

APPENDICES

TOTAL MAXIMUM DAILY LOAD

WATER QUALITY MANAGEMENT PLAN COMPONENT
 Department of Environmental Quality
 811 Southwest Sixth Avenue, Portland, OR 97204
 Telephone: (503) 229-5696

Developed pursuant to ORS 468.730 and The Federal Clean Water Act

WATER QUALITY LIMITED SEGMENT:

Tualatin River (RM 0 - 58.8)

RECEIVING SYSTEM INFORMATION:

Basin: Willamette
 Subbasin: Tualatin
 County: Washington
 Clackamas
 Multnomah
 Yamhill

WQ STANDARD NOT ATTAINED:

Nuisance Algal Growth, pH

APPLICABLE RULES:

OAR 340-41-442
 OAR 340-41-150
 OAR 340-41-445(2) (d)

TMDL PARAMETER:

Total Phosphorus

OAR 340-41-006
 OAR 340-41-470(3)

STREAM SEGMENTS AND SOURCES COVERED BY THIS TMDL:

<u>Source Number</u>	<u>Allocation Type</u>	<u>Source Description</u>
001	LA	Tualatin River (upstream input)
002	LA	Scoggins Creek Sub-basin
003	LA	Mainstem and other streams above Dilley (58.8)
004	LA	Gales Creek Sub-basin
005	LA	Mainstem and other streams above Golf Course Road (RM 58.8 - 52.8)
006	LA	Dairy Creek Sub-basin
007	LA	Mainstem and other tributaries above Rood Rd. (RM 52.8 - 38.5)
008	WLA	USA Rock Creek WTP
009	LA	Rock Creek Sub-basin
010	LA	Mainstem and other tributaries above Farmington (RM 38.5 - 33.3)
011	LA	Mainstem and other tributaries above Elsner (RM 33.3 - 16.2)
012	WLA	USA Durham WTP
013	LA	Fanno Creek Sub-basin
014	LA	Mainstem, Chicken Creek, and other tributaries above Stafford (RM 16.2 - RM 5.4)
015	LA	Mainstem and other tributaries below Stafford (RM 5.4 - 0)
016	LA	Oswego Lake Sub-basin Draining to Oswego Lake

WATER QUALITY MANAGEMENT ACTIVITIES AND IMPLEMENTATION

Until this TMDL is modified, point source permits will be reissued as they are re-opened or expire to include limits for complying with the established waste loads. Compliance schedules will be specified within these permits for reaching identified limits where reduced limits are needed. Nonpoint sources will be addressed through specified schedules established in required program plans for developing and implementing needed control programs. All requirements, limitations, and conditions are set forth in the attached schedules as follows:

	<u>Page</u>
Schedule A - Pollutant Discharge Limits not to be Exceeded...	3
Schedule B - Minimum Monitoring and Reporting Requirements...	11
Schedule C - Compliance Conditions and Schedules.....	13
Schedule D - Special Conditions.....	14

- a. The loading capacity for total phosphorus in the Tualatin River is based on attaining a monthly median concentration of 70 ug/l of total phosphorus. Net load allocations are based on attaining measured concentrations of total phosphorus at specific locations as defined by OAR 340-41-470 and summarized below:

Cherry Grove (67.8)	20 ug/l
Dilley (58.8)	40 ug/l
Golf Course Rd. (52.8)	45 ug/l
Rood Rd. (38.5)	50 ug/l
Farmington (33.3)	70 ug/l
Elsner (16.2)	70 ug/l
Stafford (5.4)	70 ug/l

- b. Loading capacity for the Oswego Lake sub-basin was calculated by the Vollenweider method and described in Lake Oswego Lake and Watershed Assessment 1986 - 1987. Diagnostic and Restoration Analysis. Scientific Resources Inc. Portland, Or.
- c. Loading capacities are divided into four hydrologic categories based on typical flows observed between May and October in the Tualatin River and tributaries. The design flow for the lowest range is noted in parenthesis (XX). The design flow for determining loading capacity for the other hydrologic categories is the low end of the flow range.
- d. Schedule A, section 1, describes "existing conditions" for phosphorus loads in the Tualatin Basin. Schedule A, section 1, lists the interim load limits not to be exceeded until the implementation of controls. Schedule A, section 2, provides estimated loads by land use required to achieve water quality standards in the Tualatin Basin. These load allocations provide guidance for developing the required program plans.

SCHEDULE A

Pollutant load limits not to be Exceeded

1. Pollutant load limits not to be exceeded until implementation of controls needed to meet condition 2, Schedule A., except as allowed by OAR 340-41-470(3) (existing conditions).

Source Number	Source Description	<u>MONTHLY AVERAGE PHOSPHORUS LOADS</u>				
		May 1 to November 15 (pounds per day)				
001	IA Tualatin River Upstream Input	<u>Tualatin River flow near Gaston (USGS)</u>				
		less than 10 cfs (5)	10 to 20 cfs	20 to 30 cfs	greater than 30 cfs	
	LOAD	lbs/d	0.54	1.08	2.16	3.24
002	IA Scoggins Creek	<u>Scoggins Creek Flow (TVID)</u>				
		less than 50 cfs (25)	50 to 100 cfs	100 to 150 cfs	greater than 150 cfs	
	LOAD	lbs/d	8.10	16.2	32.4	48.6
003	IA Mainstem River and other tributaries above Dilley RM 68.8 - 58.8	<u>Tualatin River flow near Dilley (USGS)</u>				
		less than 60 cfs (30)	60 to 120 cfs	120 to 180 cfs	greater than 180 cfs	
	LOAD		6.5	13.0	26.0	39.0
004	IA Gales Creek Sub-basin	<u>Gales Creek Flow (TVID)</u>				
		less than 10 cfs (5)	10 to 25 cfs	25 to 50 cfs	greater than 50 cfs	
	LOAD		2.0	4.0	10.1	20.2
005	IA Mainstem River and other Tributaries above Golf Course Rd. RM 58.8 - 52.8	<u>Tualatin River Below Pump Plant (TVID)</u>				
		less than 50 cfs (25)	50 to 100 cfs	100 to 200 cfs	greater than 200 cfs	
	LOAD		7.4	14.8	29.7	59.
006	IA Dairy Creek Sub-basin	<u>Dairy Creek Flow (TVID)</u>				
		less than 25 cfs (10)	25 to 50 cfs	50 to 100 cfs	greater than 100 cfs	
	LOAD		6.7	16.8	33.7	67.5

007	IA Mainstem River and other Tributaries above Rood Rd. RM 52.8 - 38.5	<u>Tualatin River at Rood Rd. (TVID)</u>			
		less than 100 cfs (75)	100 to 170 cfs	170 to 270 cfs	greater than 270 cfs
	LOAD	42.5	55.6	91.8	153.1
008	WLA USA Rock Creek Sewage Treatment Plant.	<u>Tualatin River at Farmington (USGS)</u>			
		less than 120 cfs(100)	120 to 200 cfs	200 to 300 cfs	greater than 300 cfs
	LOAD (2250 ug/l * 20 cfs)	245	245	245	245
009	IA Rock Creek Sub-basin	<u>Rock Creek Flow</u>			
		less than 5 cfs(2.5)	5 to 10 cfs	10 to 25 cfs	greater than 25 cfs
	LOAD	4.3	8.7	17.2	43.2
010	IA Mainstem River and other Tributaries above Farmington RM 38.5 - 33.3	<u>Tualatin River at Farmington (USGS)</u>			
		less than 120 cfs(100)	120 to 200 cfs	200 to 300 cfs	greater than 300 cfs
	LOAD	200	245	405	610
011	IA Mainstem River and other Tributaries above Elsner. RM 33.3 - 16.2	<u>Tualatin River at Farmington (USGS)</u>			
		less than 120 cfs(100)	120 to 200 cfs	200 to 300 cfs	greater than 300 cfs
	load	135	162	324	400
012	WLA USA Durham Sewage Treatment Plant.	<u>Tualatin River at Farmington (USGS)</u>			
		less than 120 cfs(100)	120 to 200 cfs	200 to 300 cfs	greater than 300 cfs
	LOAD (2250 ug/l*20cfs)	245	245	245	245

013	IA Fanno Creek Sub-basin	<u>Fanno Creek Flow</u>			
		less than 5 cfs(2.5)	5 to 10 cfs	10 to 25 cfs	greater than 25 cfs
	LOAD	2.7	5.4	10.8	27.0
014	IA Mainstem River and other Tributaries above Stafford RM 38.5 - 16.2	<u>Tualatin River at West Linn (USGS) Plus Flow in the Lake Oswego Diversion</u>			
		less than 120 cfs(100)	120 to 200 cfs	200 to 300 cfs	greater than 300 cfs
	LOAD	190	225	380	570
015	IA Mainstem River and other Tributaries Below Stafford RM 38.5 - 16.2	<u>Tualatin River at West Linn (USGS)</u>			
		less than 120 cfs(100)	120 to 200 cfs	200 to 300 cfs	greater than 300 cfs
	LOAD	190	225	380	570
016	IA Oswego Lake sub-basin draining to Oswego Lake	<u>Independent of flow in the Tualatin River</u>			
		Background	650 lbs/year		
		Allocation	29850 lbs/year		
		TMDL	30500 lbs/year		

SCHEDULE A

Pollutant Load limits not to be Exceeded

2. Pollutant loads not to be exceeded after implementation of controls
(Loads to use for development of program plans).

Source Number	Source Description	<u>MONTHLY AVERAGE PHOSPHORUS LOADS</u>			
		May 1 to November 15 (pounds per day)			
001	IA Tualatin River Upstream Input	<u>Tualatin River flow near Gaston (USGS)</u>			
		less than 10 cfs (5)	10 to 20 cfs	20 to 30 cfs	greater than 30 cfs
	TMDL 20 ug/l lbs/d	0.54	1.08	2.16	3.23
	Allocations:				
	City of Gaston	0.02	0.04	0.07	0.11
	Washington County	0.02	0.03	0.06	0.09
	Yamhill County	0.01	0.01	0.01	0.01
	Agriculture	0.37	0.76	1.54	2.30
	Forestry	0.12	0.24	0.48	0.72
	002	IA Scoggins Creek	<u>Scoggins Creek Flow (TVID)</u>		
less than 50 cfs (25)			50 to 100 cfs	100 to 150 cfs	greater than 150 cfs
TMDL 40 ug/l lbs/d		5.39	10.78	21.56	32.34
Allocations:					
Washington County		0.68	1.36	2.72	4.08
Agriculture		1.80	3.59	7.18	10.77
Forestry		2.91	5.83	11.66	17.49
003	IA Mainstem River and other tributaries above Dilley RM 68.8 - 58.8	<u>Tualatin River flow near Dilley (USGS)</u>			
		less than 60 cfs (30)	60 to 120 cfs	120 to 180 cfs	greater than 180 cfs
	Net Load (40 ug/l)	6.47	12.94	25.87	38.81
	TMDL	0.54	1.08	2.16	3.23
	Allocations:				
	Washington County	0.39	0.78	1.56	2.34
	Agriculture	0.13	0.26	0.53	0.79
	Forestry	0.02	0.04	0.07	0.10
004	IA Gales Creek Sub-basin	<u>Gales Creek Flow (TVID)</u>			
		less than 10 cfs (5)	10 to 25 cfs	25 to 50 cfs	greater than 50 cfs
	TMDL (45 ug/l)	1.21	2.43	6.06	12.13
	Allocations:				
	City of Forest Grove	0.19	0.38	0.96	1.91
	Washington County	0.54	1.09	2.72	5.45
	Agriculture	0.27	0.54	1.34	2.68
Forestry	0.21	0.42	1.04	2.09	

005	IA Mainstem River and other Tributaries above Golf Course Rd. RM 58.8 - 52.8	<u>Tualatin River Below Pump Plant (TVID)</u>				
		less than 50 cfs (25)	50 to 100 cfs	100 to 200 cfs	greater than 200 cfs	
		Net Load (45 ug/l)	6.0	12.1	24.3	48.6
		TMDL	0.40	1.62	3.23	4.80
		Allocations:				
		City of Cornelius	0.02	0.10	0.18	0.27
		Washington County	0.32	1.32	2.65	3.98
		Agriculture	0.05	0.19	0.38	0.57
		Forestry	0.01	0.01	0.02	0.03
		006	IA Dairy Creek Sub-basin	<u>Dairy Creek Flow (TVID)</u>		
less than 25 cfs (10)	25 to 50 cfs			50 to 100 cfs	greater than 100 cfs	
TMDL (45 ug/l)	2.43			6.06	12.13	24.25
Allocations:						
City of Banks	0.02			0.05	0.09	0.19
City of North Plains	0.06			0.16	0.32	0.65
City of Cornelius	0.10			0.24	0.49	0.97
City of Forest Grove	0.10			0.24	0.48	0.97
City of Hillsboro	0.20			0.47	0.95	1.89
Washington County	0.56			1.41	2.82	5.36
Agriculture	1.11	2.80	5.61	11.21		
Forestry	0.21	0.54	1.07	2.41		
Department's Reserve	0.07	0.15	0.30	0.60		
007	IA Mainstem River and other Tributaries above Rood Rd. RM 52.8 - 38.5	<u>Tualatin River at Rood Rd. (TVID)</u>				
		less than 100 cfs (75)	100 to 170 cfs	170 to 270 cfs	greater than 270 cfs	
		Net Load (50 ug/l)	20.2	27.0	45.9	72.9
		TMDL	2.02	2.69	4.58	7.28
		Allocations:				
		City of Hillsboro	0.26	0.36	0.60	0.96
		Washington County	1.26	1.67	2.85	4.52
		Agriculture	0.42	0.56	0.97	1.55
		Forestry	0.01	0.01	0.01	0.02
		Department's Reserve	0.07	0.09	0.15	0.23
008	WLA USA Rock Creek Sewage Treatment Plant.	<u>Tualatin River at Farmington (USGS)</u>				
		less than 120 cfs(100)	120 to 200 cfs	200 to 300 cfs	greater than 300 cfs	
		Allocations:				
outfall 001	15.63	18.32	25.87	36.65		

009	IA Rock Creek Sub-basin	Rock Creek Flow			
		less than 5 cfs(2.5)	5 to 10 cfs	10 to 25 cfs	greater than 25 cfs
	TMDL (70 ug/l)	0.94	1.89	3.77	9.43
	Allocations:				
	City of Portland	0.03	0.06	0.11	0.28
	City of Beaverton	0.13	0.27	0.53	1.34
	City of Hillsboro	0.16	0.32	0.64	1.60
	Washington County	0.56	1.12	2.27	5.67
	Multnomah County	0.01	0.01	0.01	0.02
	Agriculture	0.01	0.02	0.03	0.05
	Forestry	0.01	0.01	0.02	0.86
	Department's Reserve	0.03	0.08	0.16	0.41
010	IA Mainstem River and other Tributaries above Farmington RM 38.5 - 33.3	Tualatin River at Farmington (USGS)			
		less than 120 cfs(100)	120 to 200 cfs	200 to 300 cfs	greater than 300 cfs
	Loading Capacity	37.73	45.27	75.46	113.19
	TMDL	0.89	1.03	1.10	1.13
	Allocations:				
	City of Hillsboro	0.01	0.01	0.01	0.01
	Washington County	0.26	0.30	0.32	0.33
	Agriculture	0.18	0.21	0.22	0.23
	Department's Reserve	0.44	0.51	0.55	0.56
011	IA Mainstem River and other Tributaries above Elsner. RM 33.3 - 16.2	Tualatin River at Farmington (USGS)			
		less than 120 cfs(100)	120 to 200 cfs	200 to 300 cfs	greater than 300 cfs
	Loading Capacity	37.73	45.27	75.46	113.19
	TMDL	8.05	8.55	8.80	9.12
	Allocations:				
	Washington County	0.17	0.18	0.19	0.20
	Agriculture	3.69	3.92	4.03	4.17
	Forestry	0.17	0.18	0.18	0.19
	Department's Reserve	4.03	4.27	4.40	4.56

012	WLA USA Durham Sewage Treatment Plant.	<u>Tualatin River at Farmington (USGS)</u>			
		less than 120 cfs(100)	120 to 200 cfs	200 to 300 cfs	greater than 300 cfs
	Allocation: Outfall 001	9.13	9.52	10.71	12.28

013	LA Fanno Creek Sub-basin	<u>Fanno Creek Flow</u>			
		less than 5 cfs(2.5)	5 to 10 cfs	10 to 25 cfs	greater than 25 cfs
	TMDL	0.94	1.89	3.77	9.43
	Allocation:				
	City of Portland	0.20	0.41	0.83	2.05
	City of Beaverton	0.16	0.32	0.63	1.58
	City of Tigard	0.27	0.56	1.12	2.81
	King City	0.01	0.01	0.01	0.02
	City of Durham	0.01	0.03	0.05	0.13
	City of Tualatin	0.01	0.02	0.04	0.11
	Multnomah County	0.01	0.01	0.01	0.02
	Washington County	0.23	0.46	0.93	2.32
	Department's Reserve	0.04	0.07	0.15	0.39

014	LA Mainstem River and other Tributaries above Stafford RM 38.5 - 16.2	<u>Tualatin River at West Linn (USGS) Plus flow in the Lake Oswego Diversion</u>			
		less than 120 cfs(100)	120 to 200 cfs	200 to 300 cfs	greater than 300 cfs
	Loading Capacity	37.73	45.27	75.46	113.19
	TMDL	3.69	4.62	7.40	11.08
	Allocations:				
	City of Sherwood	0.21	0.27	0.43	0.64
	King City	0.05	0.06	0.09	0.14
	City of Tigard	0.01	0.01	0.01	0.01
	City of Durham	0.01	0.01	0.01	0.01
	City of Tualatin	0.56	0.70	1.11	1.67
	City of Lake Oswego	0.03	0.04	0.07	0.10
	Washington County	0.58	0.73	1.17	1.75
	Yamhill County	0.03	0.04	0.07	0.10
	Clackamas County	0.04	0.05	0.07	0.11
	Agriculture	0.58	0.73	1.17	1.75
	Forestry	0.02	0.03	0.04	0.06
	Department's Reserve	1.56	1.95	3.16	4.74

015	IA Mainstem River and other Tributaries Below Stafford RM 38.5 - 16.2	<u>Tualatin River at West Linn (USGS)</u>			
		less than 120 cfs(100)	120 to 200 cfs	200 to 300 cfs	greater than 300 cfs
	Loading Capacity	37.73	45.27	75.46	113.19
	TMDL	1.56	1.51	1.28	0.98
	Allocations:				
	City of Lake Oswego	0.05	0.05	0.05	0.05
	City of West Linn	0.58	0.60	0.60	0.61
	Agriculture	0.14	0.15	0.15	0.15
	Department's Reserve	0.79	0.71	0.48	0.17

016	IA Oswego Lake sub-basin draining to Oswego Lake	<u>Independent of flow in the Tualatin River</u>			
	Background	650 lbs/year			
	Allocation	850 lbs/year			
	TMDL	1500 lbs/year			

SCHEDULE B

Minimum Monitoring and Reporting Requirements

(unless otherwise approved in writing by the Department)

1. Ambient Monitoring. The Department and USA shall operate a receiving water monitoring program to evaluate the effectiveness of the TMDL and to guide development of any additional control strategies. The ambient monitoring program shall consist of the following:

<u>Stream</u>	<u>River Mile</u>	<u>Agency</u>	<u>Parameter</u>	<u>Minimum Frequency</u> *	<u>Type of Sample</u>
Tualatin River	38.5	DEQ/USA	Basic/ ¹ & Solids/ ²	Semimonthly	Grab
		"	Nutrients/ ³	Semimonthly	Grab
		"	Chloro. <u>a</u>	Semimonthly	Grab
Tualatin River	33.3	USA	Flow	Daily	Recording
		"	Basic/ ¹ & Solids/ ²	Monthly	Grab
		"	Nutrients/ ³	Monthly	Grab
		"	Chloro. <u>a</u>	Monthly	Grab
Tualatin River	27.1	DEQ/USA	Basic/ ¹ & Solids/ ²	Semimonthly	Grab
		"	Nutrients/ ³	Semimonthly	Grab
		"	Chloro. <u>a</u>	Semimonthly	Grab
Tualatin River	16.2	DEQ/USA	Basic/ ¹ & Solids/ ²	Semimonthly	Grab
		"	Nutrients/ ³	Semimonthly	Grab
		"	Chloro. <u>a</u>	Semimonthly	Grab
Tualatin River	8.4	DEQ/USA	Basic/ ¹ & Solids/ ²	Semimonthly	Grab
		"	Nutrients/ ³	Semimonthly	Grab
		"	Chloro. <u>a</u>	Semimonthly	Grab
Tualatin River	5.4	USA	Flow	Daily	Recording
		"	Basic/ ¹ & Solids/ ²	Monthly	Grab
		"	Nutrients/ ³	Monthly	Grab
		"	Chloro. <u>a</u>	Monthly	Grab
Dairy - McKay Creek	5.0	USA	Basic/ ¹ & Solids/ ²	Monthly	Grab
		"	Nutrients/ ³	Monthly	Grab
		"	Chloro. <u>a</u>	Monthly	Grab
Rock Creek	1.2	USA	Basic/ ¹ & Solids/ ²	Monthly	Grab
		"	Nutrients/ ³	Monthly	Grab
		"	Chloro. <u>a</u>	Monthly	Grab
Chicken Creek	1.0	USA	Basic/ ¹ & Solids/ ²	Bimonthly	Grab
		"	Nutrients/ ³	Bimonthly	Grab
		"	Chloro. <u>a</u>	Bimonthly	Grab
Fanno Creek	1.2	USA	Basic/ ¹ & Solids/ ²	Monthly	Grab
		"	Nutrients/ ³	Monthly	Grab
		"	Chloro. <u>a</u>	Monthly	Grab

2. Source Monitoring. The following source monitoring program will be conducted by USA to describe wasteloads being discharged to the Tualatin River:

<u>Source</u>	<u>Parameter</u>	<u>Minimum Frequency</u>	<u>Type of Sample</u>
USA - Rock Creek WTP (Outfall 001)	Total Flow (mgd)	Continuous	Recording
	Ammonia Nitrogen	Daily	Composite
	Total Kjel. Nitrogen	Daily (Jun-Sep)	Composite
	"	Weekly (Oct-May)	"
	NO ₂ +NO ₃ -N	Daily (Jun-Sep)	Composite
	"	Weekly (Oct-May)	"
	Total Phosphorus	3 days per week	Composite
USA - Durham WTP (Outfall 001)	Total Flow (mgd)	Continuous	Recording
	Ammonia Nitrogen	Daily	Composite
	Total Kjel. Nitrogen	Daily (Jun-Sep)	Composite
	"	Weekly (Oct-May)	"
	NO ₂ +NO ₃ -N	Daily (Jun-Sep)	Composite
	"	Weekly (Oct-May)	"
	Total Phosphorus	3 days per week	Composite

Notes:

* May 1 - October 15 unless otherwise noted.

1. Basic: Water temperature, dissolved oxygen, conductivity, pH
2. Solids: Total solids, total suspended solids
3. Nutrients: NH₃-N, NO₂+NO₃-N, Total Kjeldahl Nitrogen, Total Phosphorus

3. Monitoring Procedures. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136 unless other test procedures have been approved by the Department.
4. Reporting Procedures. Monitoring results shall be reported on approved forms. The reporting period is the calendar month. Reports must be submitted to the Department by the 15th day of the following month.

SCHEDULE C

Compliance Conditions and Schedules

1. Within 90 days of adoption of implementation rules for the Tualatin River by the Environmental Quality Commission, the Unified Sewerage Agency shall submit a plan and time schedule to the Department describing how and when the Agency will modify its sewerage facilities to comply with this TMDL. This could result in a redistribution of wasteload and load allocations described in schedule A parts 1 and 2.
2. Within 90 days of adoptions of implementation rules for the Tualatin River by the Environmental Quality Commission, the Department will establish interim load allocations for guidance to nonpoint source program plans.
3. Within 18 months after the adoption of these rules, Washington, Clackamas, and Multnomah Counties, and all incorporated cities within the Tualatin River and Oswego Lake sub-basins shall submit to the Department a program plan for controlling the quality of urban storm water runoff within their respective jurisdictions. Review of program plans could result in a redistribution of allocations and modification of sampling requirements.
4. After July 1, 1989, Memorandums of Agreements between the Departments of Forestry and Agriculture and the Department of Environmental Quality shall include a time schedule for submitting a program plan. Review of program plans could result in a redistribution of allocations and modification of sampling requirements.

SCHEDULE D

Special Conditions

1. A biennial assessment report will be prepared by nonpoint source agencies responsible for program plans which describes the effectiveness of their control programs towards attaining water quality standards on the Tualatin Basin. This report will be submitted to the Department by January 1 on even numbered years for incorporation into the state-wide water quality status assessment Section 305(b) Report Required by the Federal Clean Water Act).

2. The Department, USA, and responsible nonpoint source agencies will use the assessment report and other information from the monitoring program to continually evaluate the effectiveness of this TMDL. If the data indicates adjustments are needed, the TMDL will be reopened. Waste load allocations and load allocations may be redistributed. The TMDL may exceed the Loading Capacity only under the conditions described by section 302 (b) (2) (A) of the Federal Clean Water Act.

Net Load by Jurisdiction for various flow ranges

Flow at Farmington	Less than 120 cfs	120 to 200 cfs	200 to 300 cfs	greater than 300 cfs
Agriculture Department	8.75	13.73	23.15	36.22
Banks	0.02	0.05	0.09	0.19
Beaverton	0.29	0.59	1.16	2.92
Clackamas County	0.04	0.05	0.07	0.11
Cornelius, City of	0.12	0.34	0.67	1.24
Department's reserve	7.03	7.83	9.35	11.66
Durham, City of	0.02	0.04	0.06	0.14
Forest Grove	0.29	0.62	1.44	2.88
Forestry Department	3.69	7.31	14.59	23.97
Gaston	0.02	0.04	0.07	0.11
Hillsboro	0.63	1.16	2.2	4.46
King City	0.06	0.07	0.1	0.16
Lake Oswego, City of	0.08	0.09	0.12	0.15
Multnomah County	0.02	0.02	0.02	0.04
North Plains, City of	0.06	0.16	0.32	0.65
Portland, City of	0.23	0.47	0.94	2.33
Tigard, City of	0.28	0.57	1.13	2.28
Tualatin, City of	0.57	0.72	1.15	1.78
Washington County	5.57	10.45	20.26	36.09
West Linn	0.58	0.6	0.6	0.61
Yamhill County	0.04	0.05	0.08	0.11
Summation				
NPS Load Allocations	28.39	44.96	77.57	128.1

Points Source Waste Load Allocations

USA Durham	9.13	9.52	10.71	12.28
USA RCWTP	15.63	18.32	25.87	36.65
USA Total	24.76	27.84	36.58	48.93

CONTAINER NURSERY IRRIGATION WATER
MANAGEMENT PLAN

I. Preface

These guidelines are designed to help facilitate implementation of the memorandum of agreement between the Department of Environmental Quality (DEQ) and the Oregon Department of Agriculture (ODA) for regulating irrigation runoff from container nursery facilities. The purpose of these guidelines is to assure minimal water quality degradation from activities associated with the production of container nursery stock in Oregon. In addition, these guidelines establish achievable, cost effective management practices for the industry that will facilitate construction and management of projects which will maximize the protection of Oregon's water quality.

II. Definitions

This section assumes definitions in OAR 340-41-006. In addition, the following definitions are specific to these guidelines:

Best Management Practices (BMPs)

Agricultural Best Management Practices are those management practices and structural measures which are determined to be the most effective, practicable means of preventing or reducing discharges from agricultural activities. Practices may be used singly or together in a management system. BMPs are actions to be taken by each individual agricultural operation in controlling discharges for the achievement of water quality goals. The specific practices appropriate for each operation are to be identified in the individual Water Management Plan.

Container Nursery

Any farm facility which is devoted to the propagation or growth of containerized plants.

Discharge

A release of irrigation return flows to surface waters, or a significant release of such water to groundwater by seepage through a leach field or inadequately sealed pond. Disposal of such water to a disposal well or seepage pit is illegal. Normal seepage through a properly sealed recycle pond or resulting from standard irrigation practices is not classified as a discharge.

Instream Pond

An impoundment within a stream which receives surface water even though it may have a primary purpose of water supply or flood control. Impoundments within drainageways which do not normally flow between May 1 and October 31 or which do not receive surface run-off are not considered in-stream ponds under this definition.

Irrigation Season

The period between May 1 and October 31.

Recycled Waters

Recycled waters consist of runoff waters captured in the drainage control system of a containerized nursery. Recycled waters are re-used as irrigation water for the growth and propagation of farm products whether associated with the containerized nursery or not.

Stipulated Consent Order

A consent agreement and order signed by the owner or operator and the director of DEQ. The order stipulates those management practices, time schedules, and self-monitoring requirements which have been agreed upon between the parties. It is a legally enforceable document.

Water Management Plan

The water management plan constitutes a document outlining the construction and management activities to be undertaken by a specific container nursery facility to assure compliance with water quality and quantity standards. The plan shall contain the elements outlined in Section VIII of these guidelines.

Water Pollution Control Facilities Permit

A Permit issued by DEQ pursuant to Oregon Administrative Rules Chapter 340, Division 14.

III. General Policies

The following general policies describe the scope and applicability of these guidelines:

- a. The guidelines contained in this document apply to all operations of which any part of the farming activities meet the definition of a container nursery. Justifications for exclusion from these guidelines may be made on a case by case basis to the ODA. Justification for exclusion may be based on size, management practices or duplicity of regulation.
- b. Water quality regulations as specified in OAR 340, Division 41, shall be considered as the water quality baseline of reference in administration of the program described in these guidelines and strategies. Special basin standards which are duly adopted and outlined in administrative regulations will be considered to supersede the general statewide water quality regulation.
- c. The policy of this guideline shall be to minimize any negative effect of farm operations on receiving streams during the irrigation season. Low flow in receiving streams significantly compounds the effect of discharges from any

source. The goal will normally be the prevention of discharge of irrigation return flows during the irrigation season.

- d. Practices oriented toward management of discharges during the irrigation season will be specified in a Water Management Plan submitted by individual farms according to the schedule in Section V (Strategies for Compliance) and Section VII (Best Management Practices).
- e. Management practices which reduce impacts to surface waters at the irrigation site, irrigation pond, recycling pond, and the conveyance area between the irrigation site and pond (or other discharge area) will be specified in the Water Management Plan.

IV. Implementation

Those container nursery facilities that do not have discharges during the irrigation season at the time of implementation of this plan, or that will not have discharges during the irrigation season in the future, are not required to develop a water management plan. The Water Management Plan is a document submitted by the farm to ODA under the Memorandum of Agreement between ODA and DEQ. The ODA will review each management plan and either approve, approve with amendments, or disapprove each plan. ODA will be authorized to establish and collect plan review fees adequate to support the logistical and technical demands of Water Management Plan review and compliance.

Nursery facilities without any discharges shall be considered to be in full compliance with Sections V and VII of these guidelines.

Water Management Plans shall be submitted in compliance with Section V of these guidelines. Review of Management Plans will be completed by ODA within 90 days of submittal.

Water Management Plans will become effective immediately upon approval. Items requiring substantial construction shall be completed as scheduled in the respective management plan.

V. Strategies for Compliance

The scope of the documents submitted is dependent upon the presence and nature of discharges from the specific facility. A letter of intent will be filed with ODA by operators, prior to July 15, 1991, indicating which of the following options will be pursued:

A. No Discharges: Submit statement, No Fee

Those facilities which will have no discharges during the irrigation season after May 1, 1992, will be required to submit a statement listing those control activities which prevent discharges.

B. Discharge Between May 1, 1992, & June 1, 1993: Prepare Plan, Pay Fee to ODA

Those container nursery facilities which will have irrigation season discharges after May 1, 1992, but will commit to eliminating the discharges by June 1, 1993, will be required to submit a Water Management Plan to ODA by February 1, 1992, for approval by ODA by May 1, 1992, to show how they will accomplish the elimination of discharges.

C. Discharge After June 1, 1993: Obtain WPCF Permit From DEQ

Those container nursery facilities which will have irrigation season discharges after June 1, 1993, will be required to obtain a Water Pollution Control Facility permit from DEQ prior to June 1, 1993. The permit will establish a monitoring plan listing discharge limitations for several parameters. Additional waste treatment may be required.

VI. Non-permitted Activities

This section describes those activities which constitute a gross violation of these guidelines. ODA and DEQ may ensure compliance through the use of enforcement actions in compliance with the Memorandum of Agreement between ODA & DEQ dated August 4, 1989, and through the use of Stipulated Consent Orders and WPCF permits. ODA will negotiate the elements of Stipulated Consent Orders.

- Violations of the approved Water Management Plan that cause the discharge of waters in violation of OAR 340, Division 41.
- Continued operational violations of the approved Water Management Plan will result in the requirement to obtain a WPCF permit from DEQ, unless ODA approves an extension.
- Failure to perform required monitoring, submit reports or comply with other conditions of the approved Water Management Plan.
- Failure to submit documents required in Section VIII by February 1, 1992, for approval by ODA by May 1, 1992, will result in the requirement to obtain a WPCF permit from DEQ.

VII. Best Management Practices

Best Management Practices are those management approaches which by their very nature tend to eliminate the discharge of waters which result in the violation of water quality standards. The specific practices appropriate to each facility are to be provided in the facility Water Management Plan. (See Appendix A for a list of possible BMPs.)

A. Irrigation tail water recirculation

1. During the irrigation season, to the maximum extent practicable, all irrigation return flows (tail water) shall

be recirculated with no discharge back to public waters. As a general rule, newly constructed water collection and recycling facilities will be designed to accommodate the irrigation tail water and to safely contain runoff as a result of precipitation from a 1/2" rain from a 24-hour storm event occurring during the irrigation season. Waters in excess of this storm event will be allowed to discharge.

2. After June 1, 1993, the following shall apply:
 - a. Irrigation tail water shall be recirculated to the maximum extent practicable.
 - b. Where irrigation tail water discharges to public waters, those waters shall meet the appropriate water quality standards and require a WPCF permit from DEQ.
 - c. If irrigation tail water is used for another irrigation practice not associated with the container nursery, it will be considered equivalent to recirculation, provided no discharge to public waters occurs.

B. New Recirculation Pond Construction

1. New construction of in-stream recirculation ponds will not be permitted.
2. Design criteria (ponds constructed after Dec. 31, 1990):
 - a. Recirculation ponds shall be constructed with a maximum permeability of the sides and bottom not to exceed 2×10^{-7} cm/sec., or be lined with an acceptable membrane liner.
 - b. Recirculation ponds shall be constructed with an emergency overflow to prevent dike damage in the event of overtopping.
 - c. Recirculation ponds shall be designed with sufficient volume to hold all of the water which can drain back to the pond from the irrigation system and to safely contain runoff as a result of precipitation from a 1/2" rain from a 24 hour storm event, occurring during the irrigation season. Ponds constructed in "high hazard" areas, as determined by the Water Resources Department, may require higher design and construction standards.
 - d. All ponds or other structures that are planned for construction must have all necessary state and local permits.

C. Existing Instream Recirculation Ponds

Existing instream recirculation ponds shall be removed from use by June 1, 1993, unless issued a WPCF permit by DEQ. The issuance of

a WPCF permit by DEQ for an instream recirculation pond will be the exception, not the rule.

VIII. Water Management Plan

The following major elements must be addressed in a Water Management Plan submitted in accordance with these guidelines.

A. Maps

1. Base maps for recording plan elements
 - a. Black and white vertical aerial photograph preferred
 - b. Assessor's maps
 - c. Maps generated by consultants
 - d. Scales for photographs should be 1" - 660' for acreage over 40 acres and 1" - 330' for acreage under 40 acres. Scales for assessor's maps may be 1" - 400' or 1" - 800'. Scales on consultant generated maps may be 1" - 500' or 1" - 1000'.
2. Location or vicinity maps
 - a. USGS quadrangle topographic maps in the 7.5 minute series is preferred.
3. Map coverage should include area 1/4 mile from nursery property lines in all directions. It should also include and identify any streams or drainage ways that could receive runoff water from the nursery. The map coverage should also include any areas where recycled waters are utilized, and any agricultural areas receiving irrigation water that has been diverted from the nursery operation.

B. Narrative:

1. General Information

This information should include the size of the nursery, general location and type of operation.

2. Irrigation Water

The narrative should describe the source of water, amount of water used, how it is diverted, how it is applied, acreage covered, and how it is stored (if applicable, including size of ponds).

3. Drainage System

The drainage system should be described. Is it open, closed or combination? How was it installed?

4. Water Recovery System

Describe how it operates. If water storage ponds are a part of the recovery system, explain how the ponds were constructed and what measures were taken to prevent leakage from them. If the system overflows, where does the water go?

5. Cross Connection Prevention

If the irrigation system uses both clean and recovered waters, what measures are taken to prevent cross connection and backflows that have the potential of contaminating the clean water source?

6. Protection of Streams

If natural streams or ditches flow through or near the nursery property, what measures are taken to prevent discharge from the nursery into these streams?

C. Best Management Practices:

1. All Best Management Practices planned or used should be listed as a separate part of the narrative and the scheduled date that each will be installed. Wherever possible, all practices should be entered on the base plan map. (Example: If 10,000 feet of underground drainage tile is to be installed, enter the tile locations on the map.)
2. When practices have been installed and are in operation, record the installation date on the plan document.

D. Supporting Documentation

1. Include all engineering plans relating to the handling of irrigation, drainage, and recovered waters.
2. Include any practice specifications that are available for planned or installed practices.
3. Include any management plans or guidelines that have been developed for individual systems. Example: Irrigation water management plan that documents needs and how these needs will be satisfied by managing the irrigation system.
4. Any photographs that document installation of any of the practices or their operation.
5. Any water flow data or water quality data generated as a result of monitoring.

E. Monitoring Program:

1. If runoff from the nursery property occurs, are flows measured?
2. Is surface discharge water quality monitored?
3. What water quality tests are being performed, including sampling methods, sample type, frequency of sampling, and use of a certified lab.

NR*18
2/91

Contents

Practice name and unit	Responsible discipline ¹	Date of current standard	Code
Access road (ft)	ENG-AE	4/82	560
Bedding (acre)	ENG-DR	10/80	310
Brush management (acre)	ECS-Range	4/80	314
Channel vegetation (acre)	ECS-Agron	10/77	322
Chiseling and subsoiling (acre)	ECS-Agron	10/77	324
Clearing and snagging (ft)	ENG-DR	10/80	326
Commercial fishponds (acre)	ECS-Bio & ENG-AE	6/84	397
Conservation cover (acre)	ECS-Agron	10/87	327
Conservation cropping sequence (acre)	ECS-Agron	10/85	328
Conservation tillage (acre)	ECS-Agron	10/87	329
Contour farming (acre)	ECS-Agron	10/80	330
Contour orchard and other fruit area (acre)	ECS-Agron	10/78	331
Cover and green manure crop (acre)	ECS-Agron	10/77	340
Critical area planting (acre)	ECS-Agron	10/77	342
Crop residue use (acre)	ECS-Agron	10/78	344
Dam, diversion (no.)	ENG-AE	10/77	348
Dam, floodwater retarding (no. and acre-ft)	ENG-PE	10/77	402
Dam, multiple-purpose (no. and acre-ft)	ENG-AE	10/78	349
Deferred grazing (acre)	ECS-Range	10/77	352
Delayed seedbed preparation (acre)	ECS-Agron	5/88	354
Dike (ft)	ENG-DR	10/80	356
Diversion (ft)	ENG-AE	10/85	362
Farmstead and feedlot windbreak (acre)	ECS-For	10/77	380
Fencing (ft)	ECS-Range	10/80	382
Field border (ft)	ECS-Agron & ENG-AE	10/77	386
Field windbreak (ft)	ECS-For	10/77	392
Filter strip (acre)	ENG-EE & ECS-Agron	4/82	393
Firebreak (ft)	ECS-For	10/77	394
Fish raceway or tank (m, ft and m ³ /s, ft ³ /s)	ECS-Bio & ENG-AE	6/84	398
Fish stream improvement (ft)	ECS-Bio	10/77	395
Fishpond management (no.)	ECS-Bio	10/77	399
Floodwater diversion (ft)	ENG-AE	10/77	400
Floodway (ft)	ENG-DR	10/77	404
Forest land erosion control system (acre)	ECS-For	4/82	408
Forest land management (acre)	ECS-For	10/87	409
Grade stabilization structure (no.)	ENG-AE	10/85	410
Grassed waterway (acre)	ECS-Agron & ENG-AE	10/85	412
Grasses and legumes in rotation (acre)	ECS-Agron	10/77	411
Grazing land mechanical treatment (acre)	ECS-Range	10/77	548
Heavy use area protection (acre)	ENG-AE	10/77	561
Hedgerow planting (ft)	ECS-Bio	10/77	422
Hillside ditch (ft)	ENG-AE	10/85	423
Irrigation canal or lateral (ft)	ENG-IE	10/77	320
Irrigation field ditch (ft)	ENG-IE	10/77	388
Irrigation land leveling (acre)	ENG-IE	10/80	464
Irrigation pit or regulating reservoir (no.)	ENG-IE		
Irrigation pit		10/77	552-A
Regulating reservoir		10/77	552-B
Irrigation storage reservoir (no. and acre-ft)	ENG-IE	10/77	436
Irrigation system (no. and acre)	ENG-IE		
Trickle		4/82	441
Sprinkler		10/87	442
Surface and subsurface		10/78	443

¹ECS—Ecological Sciences Division:
Agron—Agronomist
Bio—Biologist
For—Forester
Range—Range conservationist

ENG—Engineering Division:
AE—Agricultural engineer
DR—Drainage engineer
EE—Environmental engineer
EG—Engineering geologist
IE—Irrigation engineer
PE—Planning engineer
SE—Soils engineer

Practice name and unit	Responsible discipline ¹	Date of current standard	Code
Irrigation system, tailwater recovery (no.)	ENG-IE	10/78	447
Irrigation water conveyance (ft)	ENG-IE		
Ditch and canal lining			
Nonreinforced concrete		10/85	428-A
Flexible membrane		10/80	428-B
Galvanized steel		10/78	428-C
Pipeline			
Aluminum tubing		10/78	430-AA
Asbestos-cement		4/82	430-BB
Nonreinforced concrete		6/84	430-CC
High-pressure, underground, plastic		12/88	430-DD
Low-pressure, underground, plastic		12/88	430-EE
Steel		10/78	430-FF
Reinforced plastic mortar		4/82	430-GG
Rigid gated pipeline		10/85	430-HH
Irrigation water management (acre)	ENG-IE	10/77	449
Land clearing (acre)	ENG-AE	10/77	460
Land reclamation			
Fire control (no.)	ENG-AE	6/84	451
Shaft and adit closing (no.)	ENG-AE	6/84	452
Landslide treatment (no. and ha, acre)	ENG-SE	6/84	453
Subsidence treatment (ha, acre)	ENG-EG	6/84	454
Toxic discharge control (no.)	ENG-AE	6/84	455
Highwall treatment (no. and m, ft)	ENG-AE	6/84	456
Land reconstruction, abandoned mined land (acre)	ECS-Agron	6/84	543
Land reconstruction, currently mined land (acre)	ECS-Agron	6/84	544
Land smoothing (acre)	ENG-AE	10/80	466
Lined waterway or outlet (ft)	ENG-AE	10/77	468
Livestock exclusion (acre)	ECS-For	10/77	472
Mole drain (ft)	ENG-DR	10/80	482
Mulching (acre)	ECS-Agron	10/77	484
Obstruction removal (acre)	ENG-AE	10/80	500
Open channel (ft)	ENG-DR	10/87	582
Pasture and hayland management (acre)	ECS-Agron	10/77	510
Pasture and hayland planting (acre)	ECS-Agron	10/77	512
Pipeline (ft)	ENG-AE	10/85	516
Planned grazing systems (acre)	ECS-Agron & Range	10/77	556
Pond (no.)	ENG-AE	10/87	378
Pond sealing or lining (no.)	ENG-AE		
Flexible membrane		6/84	521-A
Soil dispersant		10/77	521-B
Bentonite sealant		10/77	521-C
Cationic emulsion-waterborne sealant		10/77	521-D
Asphalt-sealed fabric liner		10/77	521-E
Precision land forming (acre)	ENG-AE	10/80	462
Prescribed burning (acre)	ECS-For	4/82	338
Proper grazing use (acre)	ECS-Range	10/77	528
Proper woodland grazing (acre)	ECS-For	10/77	530
Pumped well drain (no.)	ENG-DR	10/77	532
Pumping plant for water control (no.)	ENG-DR	10/77	533
Range seeding (acre)	ECS-Range	10/77	550
Recreation area improvement (acre)	ECS-For	10/77	562
Recreation land grading and shaping (acre)	ENG-AE	10/77	566
Recreation trail and walkway (ft)	ENG-AE	10/77	568
Regulating water in drainage systems (acre)	ENG-DR	10/77	554
Rock barrier (ft)	ENG-AE	10/77	555
Roof runoff management (no.)	ENG-EE	6/84	558
Row arrangement (acre)	ENG-AE	10/77	557
Runoff management system (no. and acre)	ENG-PE	10/78	570
Sediment basin (no.)	ENG-AE	10/78	350
Soil salinity management (nonirrigated, acre)	ENG-DR & ECS-Agron	5/88	571
Spoil spreading (acre)	ENG-DR	10/80	572
Spring development (no.)	ENG-AE	10/87	574
Stock trails and walkways (ft)	ECS-Range	10/77	575
Streambank and shoreline protection (ft)	ENG-DR	10/85	580
Stream channel stabilization (ft)	ENG-DR	10/77	584

Practice name and unit	Responsible discipline ¹	Date of current standard	Code
Stripcropping (acre)	ECS-Agron		
Contour		10/78	585
Field		10/78	586
Wind		10/78	589
Structure for water control (no.)	ENG-DR	10/77	587
Subsurface drain (ft)	ENG-DR	5/88	606
Surface drainage (ft)	ENG-DR		
Field ditch		10/78	607
Main or lateral		10/78	608
Surface roughening (acre)	ECS-Agron	10/87	609
Terrace (ft)	ENG-AE	4/82	600
Toxic salt reduction (acre)	ECS-Agron	5/88	610
Tree planting (acre)	ECS-For	10/77	612
Trough or tank (no.)	ENG-AE	10/87	614
Underground outlet (ft)	ENG-AE	10/87	620
Vertical drain (no.)	ENG-DR	10/77	630
Waste management system (no.)	ENG-EE	4/79	312
Waste storage pond (no.)	ENG-EE	4/79	425
Waste storage structure (no.)	ENG-EE	10/80	313
Waste treatment lagoon (no.)	ENG-EE	6/84	359
Waste utilization (acre)	ECS-Agron	10/78	633
Water harvesting catchment (no.)	ENG-AE	10/78	636
Water and sediment control basin (no.)	ENG-AE	10/85	638
Waterspreading (acre)	ENG-AE	10/85	640
Water table control (acre)	ENG-DR	10/87	641
Well (no.)	ENG-IE	4/80	642
Wildlife upland habitat management (acre)	ECS-Bio	10/85	645
Wildlife watering facility (no.)	ECS-Bio	10/77	648
Wildlife wetland habitat management (acre)	ECS-Bio	10/77	644
Windbreak renovation (acre)	ECS-For	10/77	650
Woodland direct seeding (acre)	ECS-For	10/77	652
Woodland improved harvesting (acre)	ECS-For	10/77	654
Woodland improvement (acre)	ECS-For	10/77	666
Woodland pruning (acre)	ECS-For	10/77	660
Woodland site preparation (acre)	ECS-For	10/77	490

NHCP Notice 110, December 1988

ACRONYMS

ACP - Agriculture Conservation Program

AF - acre feet

ASCS - U.S.D.A. Agricultural Stabilization and Conservation Service

BMP - Best Management Practice

BMS - Best Management System

CAFO - Confined Animal Feeding Operation

CFS - cubic feet per second

CRP - Conservation Reserve Program

DEQ - Oregon Department of Environmental Quality

DMA - Designated Management Agency

EPA - U.S. Environmental Protection Agency

EQC - Environmental Quality Commission

FSA - Food Security Act of 1985

GIS - Geographical Information System

HUA - Hydrologic Unit Area

LA - load allocation

LMA - Local Management Agency

Metro - Metropolitan Service District

mg/l - milligrams per liter (parts per million)

NPSP - nonpoint source pollution

ODA - Oregon Department of Agriculture

OGI - Oregon Graduate Institute

OSDF - Oregon State Department of Forestry

OSUES - Oregon State University Extension Service

SCS - U.S.D.A. Soil Conservation Service

SWCD - Soil and Water Conservation District

TMDL - total maximum daily load

TVID - Tualatin Valley Irrigation District
ug/l - micrograms per liter (parts per billion)
USA - Unified Sewerage Agency of Washington County
USGS - U.S. Geological Survey
WAMCO - Washington County Water Management Committee
WCSWCD - Washington County Soil and Water
Conservation District
WLA - waste load allocation
WPCF - Water Pollution Control Facility

GLOSSARY

- Baseflow** The stream discharge composed of ground water drainage and delayed surface drainage.
- Best Management Practice** Those management practices and structural measures which are determined to be the most effective, practicable means of preventing or reducing the amount of pollution entering a water body. Practices may be used singly or together in a management system. BMPs are actions to be taken by each individual agricultural operation for the achievement of water quality goals. The term originated from the rules and regulations developed pursuant to Section 208 of the federal Clean Water Act (40 CFR 130).
- Clean Water Act** Also known as the federal Water Pollution Control Act (33 U.S.C. 1251 et seq.).
- Detention** The process of collection and holding back stormwater for delayed release to receiving waters.
- Erosion** Wearing away of rock or soil by the gradual detachment of soil or rock fragments by water, wind, ice, and other mechanical and chemical forces.
- Loading Capacity** The greatest amount of loading that a water can receive without violating water quality standards.
- Load Allocation** The portion of a receiving water's loading capacity that is attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources.
- Monitor** To systematically and repeatedly measure conditions in order to track changes.
- Nonpoint Source Pollution** Pollution that enters water from dispersed and uncontrolled sources (such as surface runoff) rather than through pipes.
- Nutrients** Fertilizer, particularly phosphorus and nitrogen - the two most common components that run off in sediment.
- Point Source Pollution** Pollution that enters water from a point source such as a pipe. For example, the discharge pipe from a sewage treatment plant or a factory is a point source.
- Riparian Vegetation** Terrestrial vegetation adjacent to and associated with streams.
- Total Maximum Daily Load** The sum of the individual waste load allocations for point sources, load allocations for nonpoint sources, and background.
- Waste Load Allocation** The portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution.

REQUEST FOR EQC ACTION

Meeting Date: 14 June 1991
Agenda Item: J
Division: Water Quality
Section: Municipal Projects

SUBJECT:

Request by the City of Athena for an exception of the receiving stream dilution requirement specified in the Umatilla Basin Minimum Design Criteria for Treatment and Control of Wastes (OAR 340-41-655(1)(c)).

PURPOSE:

An exception of the dilution requirement would allow the City of Athena to discharge treated municipal wastewater into Wildhorse Creek during periods of relative low stream flow. Without the exception the City would be required to provide facilities designed to only discharge when flows meet a stream to discharge flow ratio of 30 to 1.

ACTION REQUESTED:

- Work Session Discussion
 - General Program Background
 - Potential Strategy, Policy, or Rules
 - Agenda Item ___ for Current Meeting
 - Other: (specify)

 - Authorize Rulemaking Hearing
 - Adopt Rules
 - Proposed Rules
 - Rulemaking Statements
 - Fiscal and Economic Impact Statement
 - Public Notice
- Attachment ___
Attachment ___
Attachment ___
Attachment ___



811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696



Meeting Date: June 14, 1991
Agenda Item: J
Page 2

- Issue a Contested Case Order
- Approve a Stipulated Order
- Enter an Order
Proposed Order Attachment
- Approve Department Recommendation
- Variance Request Attachment
- Exception to Rule Attachment
- Informational Report Attachment
- Other: (specify) Attachment

DESCRIPTION OF REQUESTED ACTION:

The Commission is requested to grant an exception so that the dilution ratio of streamflow to effluent flow is 5 to 1.

AUTHORITY/NEED FOR ACTION:

- Required by Statute: _____ Attachment
Enactment Date: _____
- Statutory Authority: _____ Attachment
- Pursuant to Rule: OAR 340-41-655(1)(c) Attachment
- Pursuant to Federal Law/Rule: _____

Oregon Administrative Rule (OAR 340-41-655(1)(c)), commonly referred to as the dilution rule, states: "effluent biochemical oxygen demand (BOD) concentration in mg/l, divided by the dilution factor (ratio of receiving stream flow to effluent flow) shall not exceed one (1) unless otherwise approved by the Environmental Quality Commission (EQC)."

In more general terms as applied to the Athena sewerage facilities: Sewerage facilities shall be designed so that effluent with a BOD concentration of 30 mg/l shall not be discharged to a receiving stream where the ratio of receiving stream flow to effluent flow is less than 30 to 1, unless otherwise approved by the EQC.

- Other: Attachment
- Time Constraints: None

Meeting Date: June 14, 1991
Agenda Item:
Page 3

DEVELOPMENTAL BACKGROUND:

<input type="checkbox"/> Advisory Committee Report/Recommendation	Attachment	<input type="checkbox"/>
<input checked="" type="checkbox"/> Hearing Officer's Report/Recommendations	Attachment	<u>A</u>
<input type="checkbox"/> Response to Testimony/Comments	Attachment	<input type="checkbox"/>
<input type="checkbox"/> Prior EQC Agenda Items: (list)		
	Attachment	<input type="checkbox"/>
<input type="checkbox"/> Other Related Reports/Rules/Statutes:		
	Attachment	<input type="checkbox"/>
<input type="checkbox"/> Supplemental Background Information	Attachment	<input type="checkbox"/>
<input type="checkbox"/> Water Quality Evaluation	Attachment	<input type="checkbox"/>

REGULATED/AFFECTED COMMUNITY CONSTRAINTS/CONSIDERATIONS:

The City of Athena has recently upgraded its sewerage facilities pursuant to a facilities plan approved by the Department. Prior to the upgrade, the City discharged treated effluent to Wildhorse Creek year-around. The upgraded facilities include a small storage facility and an irrigation site so that discharge to the creek is eliminated from the beginning of May to the end of October.

PROGRAM CONSIDERATIONS:

Because it is based on biochemical oxygen demand, the rationale behind the dilution requirement, is to assure that there is sufficient flow in the receiving stream to maintain dissolved oxygen levels above the water quality standard. Sufficient flow in the stream helps assure adequate dissolved oxygen levels through dilution of the effluent. More flow generally increases the re-aeration of the stream because greater flow means higher velocity and more turbulence. In addition, however, oxygen depletion in a receiving stream is, in part, directly related to the water temperature. More rapid oxygen depletion takes place as receiving stream temperature increases.

The dilution requirement contemplated a year-round discharge. The City's facility, however, is designed to irrigate its waste during the summer low flow season and will only discharge to Wildhorse Creek during the months of November through April, when stream temperatures are relatively cool. The Department has evaluated the proposed discharge for the winter time period and believes that a 5 to 1 dilution ratio will not lead to water quality standards violations.

Meeting Date: June 14, 1991
Agenda Item:
Page 4

While the Department is comfortable with the 5 to 1 dilution requirement, there is limited information on the level of streamflow at the point of discharge. The only streamflow records available are from a gaging station 5 miles upstream of Athena. The gaging station was discontinued in 1978.

The flow records at that gaging station indicate that in many years, there is no flow in Wildhorse Creek in all of November and sometimes, part of December. Actual flows at Athena, however, are believed to be greater than at the gaging station. The Department believes that groundwater may be discharging into Wildhorse Creek at Athena. Infiltration of groundwater into the sewer system is a problem for the City. In addition, local officials claim that they have always observed some flow in Wildhorse Creek at Athena at all times of the year.

The new facility, as designed and constructed, is unable to store or otherwise dispose of its effluent such that it can meet the 30 to 1 dilution requirement. The storage pond can hold only about 14 days of treated effluent before discharge is necessary. At the time of design and plan review, 14 days of storage were believed to be sufficient because the monthly mean flow in Wildhorse Creek at the flow gauge upstream from Athena showed adequate stream flow to meet the 30 to 1 dilution ratio. Unfortunately, the monthly mean did not accurately represent that there are many years when flow during November and part of December is nonexistent in Wildhorse Creek. The Department currently believes that the ten year, seven day mean (7Q10) low flow would be a better representation of low flow considerations for design purposes.

At the gaging station upstream from Athena, the 7Q10 low flow would be zero. Although there is no data to verify it, the Department believes the 7Q10 low flow at Athena, however, may be sufficient to meet the 5 to 1 dilution requirement. A flow of 2.4 cubic feet per second would be needed to satisfy the 5 to 1 dilution requirements.

With the facility as upgraded, the only alternative to discharging during low flow conditions is to irrigate effluent that cannot be stored. During November and December, however, the Department believes that effluent should not be irrigated because irrigation should only occur during the growing season when the effluent and its nutrients can be consumed by the crop rather than migrating to the groundwater. Further, irrigation during prolonged freezing periods could damage the irrigation equipment.

Meeting Date: June 14, 1991
Agenda Item:
Page 5

The Department held a public hearing in Athena on 9 May 1991 on the City's proposed permit. No testimony was received regarding the exception of the dilution requirement.

ALTERNATIVES CONSIDERED BY THE DEPARTMENT:

1. Require the City to construct additional storage facilities to hold effluent for the November and December period. The Department estimates the cost of additional storage to be about \$400,000.
2. Grant the waiver for the 5 to 1 dilution and monitor the creek for the 5 year permit period to confirm that the City can meet the 5 to 1 design criteria. The permit will require monitoring and reporting of flow in the creek during periods of discharge.

DEPARTMENT RECOMMENDATION FOR ACTION, WITH RATIONALE:

The Department's recommendation is to approve the 5 to 1 dilution criteria and require the monitoring of the treatment plant and stream flows during the life of the permit. If the data show that additional facilities are needed to meet the design criteria, the subsequent permit could require the additional facilities.

The City has significantly upgraded its sewage treatment and control facilities which results in no discharge to Wildhorse Creek during the summer low flow period. The plans for those facilities were approved by the Department prior to construction. The Department believes that the 5 to 1 dilution criteria will assure that the beneficial uses of Wildhorse Creek will be protected and that water quality standards will not be violated as a result of the discharge. While the Department has some questions about the flow in the creek during the November through December period, the data is limited. Until additional data can be collected at the point of discharge the Department has no firm basis to conclude that there will not be sufficient flow in the creek such that the 5 to 1 dilution criteria cannot be met. The Department believes that the City of Athena has acted in good faith in upgrading its facilities and that further treatment and control requirements should not be imposed until sufficient data is collected to justify the need.

Meeting Date: June 14, 1991
Agenda Item:
Page 6

CONSISTENCY WITH STRATEGIC PLAN, AGENCY POLICY, LEGISLATIVE POLICY:

This recommendation is consistent with agency policy which allows the Commission to grant a waiver of the dilution requirement as specified on OAR 340-41-655(1)(c). Water quality standards would not be violated as a result of the recommended dilution criteria. An exception of the dilution requirement would not exempt the City of Athena from meeting any other permit discharge limitations.

ISSUES FOR COMMISSION TO RESOLVE:

1. Should the Commission grant the exception to the dilution rule?
2. Should the Department wait until the issuance of the next permit before determining whether the City will need additional effluent storage facilities?

INTENDED FOLLOWUP ACTIONS:

The draft permit will be prepared for final issuance following the Commission's decision.

Approved:

Section: Dick Nichols

Division: Lydia Taylor

Director: Fred Hansen

Report Prepared By: Michael R. Wiltsey

Phone: 229-6753

Date Prepared: 14 May 1991

Mike Wiltsey:crw
MW\WC8\WC8326
May 10, 1991

HEARING OFFICER'S REPORT

City of Athena NPDES Permit Hearing
May 9, 1991

On May 9, 1991, at 7:30 P.M., the Department of Environmental Quality held a public hearing concerning the proposed NPDES Waste Discharge Permit for the City of Athena sewerage facility. The hearing officer was Richard J. Nichols. Also, present from the Department were Mr. Michael Wiltsey and Mr. Bruce Hammon.

Approximately, 10 people attended the hearing. Only two persons provided testimony: Mr. Eric Pickard, Public Works Director of the City of Athena, and Mr. Ken Roley, Civil Engineer with Anderson, Perry and Associates. Anderson, Perry and Associates are the consulting engineers for the City of Athena. Both of these gentlemen reiterated comments provided to the Department in a letter received April 15, 1991, from the City of Athena. This letter is attached to this report as Attachment I.

In response to the oral testimony, the Department will specifically address the points specified in Attachment I in the order presented.

ISSUE: The City of Athena would like to increase the period of allowable discharge from November 1 to April 30 to November 1 to May 31 so that, during wet springs, effluent could be discharged when irrigation would not be necessary.

Department's Response: The Minimum Design Criteria for Treatment and Control of Wastes for the Umatilla Basin (OAR 340-41-655) requires that sewage treatment plants be designed to achieve a monthly average concentration of 20 mg/l for both BOD-5 and total suspended solids (TSS) during periods of low stream flows (approximately May 1 to October 1 of each year). The sewerage facility that has been designed and constructed by the City of Athena cannot consistently and reliably achieve 20 mg/l of BOD-5 and TSS.

More stringent effluent limitations during low stream flow periods is intended to reduce pollutant discharge loads to compensate for less available dilution and for higher stream temperatures associated with low, summer-time periods.

The Department has evaluated Wildhorse Creek during the month of May and has found that stream flows drop off markedly in May. (See Attachment II, which is a statistical summary of May flow data, and Attachment III, which is a graphical display of flow data by month.) The Department believes that flow during the month of May cannot reasonably be considered to represent higher, winter-time flow conditions. In addition, the month of May is within a month

of the summer solstice when solar heating of the creek would be expected to be greatest. Although the Department does not have any year-around temperature data to support it, the Department believes that stream temperatures will be much higher than that found in November and December when flows are also low, but solar heating is minimal. Therefore, the Department believes that extension of the permitted discharge period through the month of May is not appropriate.

ISSUE: The City of Athena believes that mass load limitations for BOD-5 and TSS proposed in the permit should be increased to account not only for higher wastewater flows due to infiltration and inflow, but also to accommodate release of treated wastewater from storage which might occur concurrently with high flows in the wastewater system.

Department's Response: The mass load limitations in the proposed permit are based upon the expected monthly average daily wet weather flow at the sewage treatment plant. This flow is 0.31 million gallons per day. The expected monthly average daily dry weather flow is 0.12 million gallons per day. The Department believes that using the wet weather flow for calculating mass loads will generally provide sufficient mass load limitations for the City.

The Department recognizes the benefits of drawing down the storage pond during high creek flows which will probably also correspond to periods of high infiltration and inflow. The Department also believes, however, that reasonable drawdown of the storage pond can still be accommodated within the limitations as proposed and when flows in Wildhorse Creek are relatively high.

ISSUE: The permit is written assuming that all wastewater from the treatment facility would pass through the holding pond prior to discharge into Wildhorse Creek. The system is designed so that the discharge from the treatment plant, after going through the chlorine contact pipe, can be discharged either into the holding pond and into the creek or directly to the creek. The City of Athena would anticipate normal operation would always be through the holding pond, but there may be situations when direct discharge to the creek rather than going through the pond would be desirable. In these cases, there may be some higher levels of residual chlorine in the effluent when discharged into the creek. The City believes it would be appropriate for the permit to recognize these conditions. Lower chlorine levels could be used if higher FC/100 ml in the original draft were allowed under these conditions. The minimum level of detection should be defined, i.e. 0.1 mg/l.

Department's Response: The Department cannot issue an NPDES waste discharge permit that would allow violation of water quality standards. Because of the relatively low flow in the creek, chlorine levels must be virtually unmeasurable

to assure that acute toxicity does not occur outside the zone of initial mixing. The Department does not know how to satisfy the City's request without the permit allowing discharge of pollutants in excess of that necessary to meet water quality standards.

The Department recognizes there may be emergency circumstances under which the holding pond needs to be removed from service. During these times, the City may have to discharge directly to the creek without the benefit of chlorine toxicity attenuation that occurs in the pond. The appropriate mechanism to consider such an emergency is not through a permit limitation, however. If the City determines that emergency pond maintenance is necessary or there is some other reason the holding pond should be bypassed, the City should notify the Department and justify the need. The Department would then evaluate the need to by-pass the holding pond relative to other potential alternatives. If the request is justified, the Department can approve the by-pass either through an enforcement action letter or other appropriate mechanism including a permit modification. In addition, that action can consider if it is appropriate to allow higher fecal coliform levels or to allow other short-term, emergency limitations.

The Department will specify 0.1 mg/l as the minimum measurable level. This level of accuracy can be provided with a portable, colorimetric kit.

ISSUE: The City would like an alfalfa crop to also be included as an approved crop.

Department's Response: The Department concurs and will revise the permit so that the city is not restricted to a grass crop for irrigation.

ISSUE: The permit requires daily measurement of flow and temperature in Wildhorse Creek. The City recognizes and understands the importance of developing baseline data for the creek and certainly feels that this baseline data would be appropriate during the winter periods when discharge is being made into Wildhorse Creek. To reduce costs, the City requests that these measurements be required only during the discharge period or that the measurements be only weekly.

Department's Response: The Department believes the flow in the creek can fluctuate considerably from day to day due to rainfall events. Therefore, weekly readings would not produce data as useful as daily readings. The Department does agree that data is not necessarily useful for the summer time period because there will be no discharge of effluent. The permit has been modified accordingly.

ISSUE: The City has requested that the permit include a regulatory upset condition as allowed by federal regulations.

Department's Response: Currently, no NPDES permits contain a regulatory upset condition. The Department will be referring this issue to the Environmental Quality Commission at its June 14, 1991, meeting. If the Commission approves inclusion of a regulatory upset condition at that meeting, one will be inserted into the General Conditions of the City's permit.

Michael Wilkey

CITY OF ATHENA

P. O. BOX 686
ATHENA, OREGON 97813
(503) 566-3862

RECEIVED
APR 15 1991

State of Oregon
Department of Environmental Quality
Executive Building
811 S.W. Sixth Avenue
Portland, Oregon 97204

WATER QUALITY DIVISION
DEPT. OF ENVIRONMENTAL QUALITY

Attn: Dick Nichols, Municipal Project Section
Water Quality Division

RE: Draft NPDES Permit for the City of Athena - File No. 4086

Dear Mr. Nichols:

The City of Athena has reviewed the revisions to the draft Discharge Permit submitted to us for our review dated March 29, 1991. We would like to express our appreciation and thanks to the Department for their willingness to modify the permit per some of our suggestions, especially as it relates to the dilution ratio for the discharge into Wildhorse Creek. This will certainly enhance our ability to meet the permit requirements without violations and is very much appreciated. We still have a few comments that we feel ought to be incorporated within the permit in order to enable the City to meet on a long-term basis the conditions and provisions of the permit. These comments are as follows:

Schedule A - 1a(1)

We would like to change the dates for when no discharge to public waters is permitted from May 1 to June 1. We would anticipate, based upon the water conditions, that we would normally begin irrigation in May of each year; however, should we have a wet spring, it may be most appropriate to begin irrigation in June rather than the first of May. This will give the City a little more flexibility in best operating its land disposal area.

Schedule A - 1a(2)

We still feel strongly that some provision needs to be provided for an increase in the allowable mass load discharge into Wildhorse Creek during periods when stored water from the holding pond is being discharged into the creek. For example, if 2,100,000 gallons of stored water in the holding pond were discharged over a 30-day period at 30 mg/l, we would be adding 17.5 pounds per day of load into the stream. If we were to drain the pond in a 14-day period, we would be adding 38 pounds per day. If we were to drain the pond in a 7-day period, we would be adding 75 pounds per day. In order to properly operate the system and have storage available should stream flows in Wildhorse Creek be low, we feel that the volume in

the pond needs to be available when conditions dictate. In order to maximize the storage availability, we also need to have the ability to drain the holding pond when the receiving stream is able to carry the added flows. The net loading discharged into the stream would be the same but the timing would be based upon flows in Wildhorse Creek. We would suggest the permit could be modified as follows:

Parameter	Average Effluent Concentrations		Monthly*	Weekly*	Daily*
	Monthly	Weekly	Average lb/day	Average lb/day	Maximum lbs
a. BOD-5	30 mg/l	45 mg/l	78+SL	117+SL	156+SL
b. TSS	30 mg/l	45 mg/l	78+SL	117+SL	156+SL

* Based on flow to the facility equaling 0.31 MGD.

SL = Storage Load (lb/day)

SL = Storage Flow x 30 mg/l x 8.34 = lb/day

Storage Flow = Total Flow - Plant Flow

This modification would allow a loading for storage flows and would not affect normal plant loading requirements.

Schedule A - 1a(2)diii

The permit is written assuming that all wastewater from the treatment facility would pass through the holding pond prior to discharge into Wildhorse Creek. The system is designed so that the discharge from the treatment plant, after going through the chlorine contact pipe, can be discharged either into the holding pond and into the creek or directly to the creek. We would anticipate normal operation would always be through the holding pond, but there may be situations when direct discharge to the creek rather than going through the pond may be appropriate. In these cases, there may be some higher levels of residual chlorine in the effluent when discharged into the creek. It would be appropriate for the permit to recognize these conditions. Lower chlorine levels could be used if higher FC/100 ml in the original draft were allowed under these conditions. The minimum level of detection should be defined, i.e., 0.1 mg/l.

Schedule A - b(3)

We would like an alfalfa crop to also be included as an approved crop.

Schedule B - 1d

This provision of the permit requires daily measurement of flow and temperature in Wildhorse Creek. We recognize and understand the importance of developing baseline data for the creek and certainly feel that this baseline data would be appropriate during the winter periods when discharge is being made into Wildhorse Creek. In order to keep our operational costs to a reasonable level, we would like to request that the summer measurements either be deleted or at least reduced to possibly weekly measurements rather than daily measurements, as this will be a significant time commitment on the part of our personnel.

There should be some type of upset provision provided in the permit. We understand this is allowed and recognized by EPA.

Your consideration of our request and comments will be very much appreciated. We feel strongly that the permit should reflect real operating conditions. Limits should not be set which would result in violation in the future. We also feel that, as changes occur that would dictate modification to the permit, these changes be possible without major administrative problems. If you need additional information, please contact either myself or our Consulting Engineers, Anderson-Perry & Associates, Inc. in La Grande, Oregon. Thanks again for your help.

Very truly yours,


Eric Pickard, Public Works Director

EP/cs

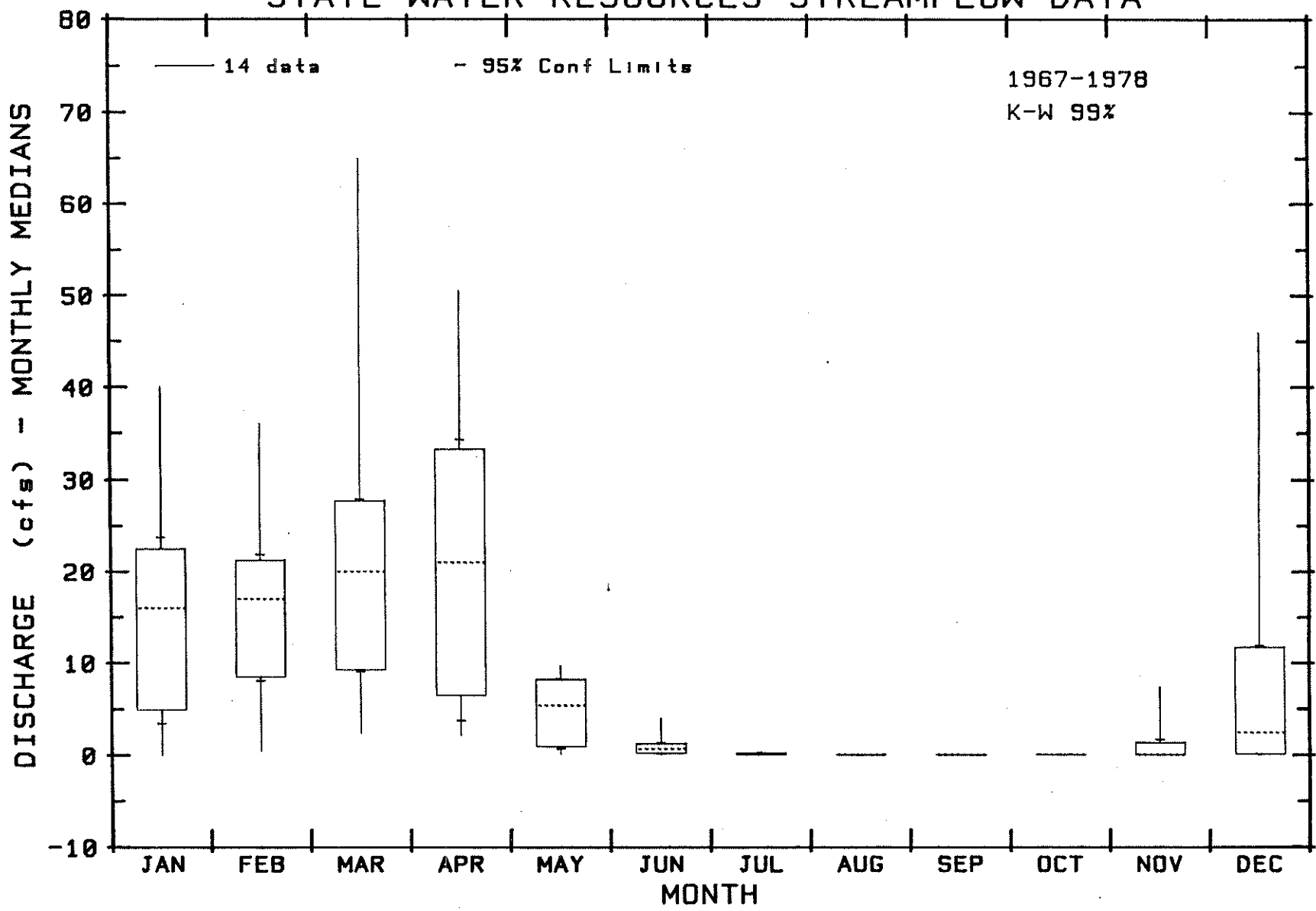
cc: Anderson-Perry & Associates, Inc.

WILDHORSE CREEK ABOVE ATHENA
WRD STREAMFLOW DATA (cfs)May
1967 - 1978

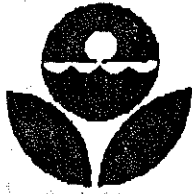
Number of data=	372
Mean=	7.2628
Std Err Mean=	0.6462
Std Dev=	12.4637
Coef of Variation=	1.7161
Coef of Skewness=	5.8157
n-Kurtosis=	48.2545
Geom. Mean=	*****
Maximum=	143.0000
0.75 perc=	8.3000
Median=	3.7900
0.25 perc=	0.9000
Minimum=	0.0000
IQR=	7.4000
Trim. Mean(2x10%)=	5.9342
Trim Mean Std Err=	0.3543
Wins. Mean(2x10%)=	4.8134
Winsored Std Dev=	6.8915
Tukey Trimean=	4.1950
MedAD=	3.1900
MnAD=	5.3628

Attachment III

WILDHORSE CREEK ABOVE ATHENA STATE WATER RESOURCES STREAMFLOW DATA



11/11/1978



U.S. EPA Region 10 Water Division

FAX: (206) 553-0165
FTS 399-0165

To Confirm Your FAX Call:
(206) 553-6913
FTS 399-8913



TO: ~~Fred Hansen~~

Phone No: _____

City, State/Region: _____

FAX NUMBER: 513 229-6124

FROM: Bob Bural
1200 Sixth Avenue, WD- 131 Seattle, WA 98101

Phone No: 206 553-6415

TOTAL PAGES: 6
(including this cover sheet)

COMMENTS:

1. The proposed rule should consider the similar mechanisms of effect of other dioxin congeners, furans, PCBs, and other similar chemicals;
2. Other chlorinated organic compounds, such as chloroform and resin acids, which are often produced in association with TCDD and which are generally controlled by the same processes which control TCDD, should also be considered for rulemaking; and,
3. Aquatic life and wildlife effects should be considered in setting a new TCDD standard.

suggests that these other endpoints may be more sensitive to TCDD exposure than the development of cancerous tumors. EPA's scientists are uncertain at present whether the new model, when combined with the new toxicological information being generated, will cause EPA's criterion to become more or less stringent. To increase the TCDD standard by over two orders of magnitude in light of this information appears inappropriate.

3. A number of other chemicals endemic in the environment appear to cause toxicity via a similar mechanism. It is possible, therefore, that chemicals such as PCBs, PAHs, DDT, furans, and dioxins other than TCDD may exacerbate the effects of exposure to TCDD. Part of the additional data being generated by EPA during the coming year is aimed at addressing this issue.
4. Current information on the effects of TCDD on aquatic organisms and wildlife has been inadequate for EPA to develop a criterion for their protection. However, both fish and wildlife have proven to be extremely sensitive to TCDD. In addition, concern has been raised over the potential effects of TCDD on threatened and endangered species, particularly bald eagles, in the Columbia River basin. To address this inadequacy, EPA is also collecting the information necessary for development of a TCDD criterion for the protection of aquatic life.

Because of the extreme toxicity of dioxin to aquatic life and laboratory animals, and because EPA is in the process of collecting a vast amount of additional information on the toxicity of TCDD, it would seem premature for Oregon to revise its TCDD standard at this time.

Region 10 does not believe that Oregon's current TCDD standard will cause any irretrievable expenditures by companies in the Pacific Northwest. All companies likely to be affected by the current standard are faced with making process changes to meet existing or proposed technology-based requirements. These technology-based requirements are expected to achieve, or come very close to achieving, TCDD limits based on the current standard of .013 ppq. In fact, Region 10 does not expect the appeals of their NPDES permits by the petitioners to be completed until after EPA concludes its TCDD reassessment next spring.

In conclusion, EPA believes that it would be premature for Oregon to consider revising its TCDD standard until EPA completes its reassessment. However, should the Environmental Quality Commission decide that a rulemaking to revise the standard is appropriate at this time, EPA suggests that the following be considered:

ENVIRONMENTAL PROTECTION AGENCY
REGION 10

COMMENTS ON PETITION TO REVISE
OREGON'S TCDD STANDARD

June 10, 1991

This document provides the Environmental Protection Agency (EPA) Region 10 comments on the May 23, 1991, petition by James River IT, Inc., and Boise Cascade Corporation to amend Oregon's water quality standard for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). The petitioners propose a standard of 2.3 parts per quadrillion (ppq) in place of the current standard of .013 ppq. For the reasons discussed below, EPA believes it is premature for the State of Oregon to revise its dioxin standard at this time, and recommends that the Environmental Quality Commission deny the petition.

As you are aware, EPA is currently reassessing the toxicity of TCDD. This reassessment is in response to a growing understanding of the mechanism by which TCDD acts and on newer information on its carcinogenicity. EPA will attempt to develop a new model for predicting harmful levels of TCDD exposure based on this more recent information. EPA expects to complete development of the model by the spring of 1992. Following its development, the model will undergo extensive peer review. Because the model will consider a number of toxicological endpoints, it will not focus solely on cancer effects, as the model used to develop EPA's current water quality criterion for TCDD does.

While the standard proposed in the petition is based on a model similar to that which EPA is currently evaluating, EPA believes that use of the model to revise the standard is premature for the following reasons:

1. EPA has only begun to develop this model. While there appears to be general agreement on the mechanism by which TCDD causes toxicity, development of a predictive model relies on a number of assumptions, few of which have undergone any kind of rigorous testing or peer review. Due to its extreme toxicity, it seems inappropriate to substantially elevate the TCDD standard without more critical review of model assumptions.
2. The new model being developed by EPA relies on multiple toxic endpoints. Little information exists for many endpoints of concern. Therefore, EPA has committed considerable resources to collect additional data on other endpoints such as reproductive and immunological responses. The scant information available to date

These comments are discussed in greater detail in the enclosure to this letter. Should you have any questions regarding our comments, please call me at (206) 553-5810. Thank you for the opportunity to comment on this petition.

Sincerely,

Dana A. Rasmussen

Dana A. Rasmussen
Regional Administrator

Enclosure



Reply to
Attn of: WD-139

Fred Hansen, Director
Oregon Department of Environmental Quality
Executive Building
811 SW Sixth Avenue
Portland, Oregon 97204

RE: Comments on Petition to Amend Oregon's standard for 2,3,7,8-
tetrachlorodibenzo-p-dioxin (TCDD)

Dear Mr. Hansen:

The Environmental Protection Agency (EPA) Region 10 believes it is premature for the State of Oregon to revise its dioxin standard at this time in response to the petition referenced above, and recommends that the Environmental Quality Commission deny the petition.

As you are aware, EPA is currently reassessing the toxicity of TCDD. EPA expects to complete development of a new model for predicting TCDD toxicity by the spring of 1992. Following its development, the new model will undergo extensive peer review. EPA has committed considerable resources to collect additional data on endpoints other than cancer effects to help support this model. These other endpoints, which include reproductive and immunological responses, are of concern as they may be more sensitive to TCDD exposure than the development of cancerous tumors. Consequently, it is impossible to predict at this time whether EPA's criterion will become more or less stringent as a result of the reassessment.

As a final note, I would like to add that the technology-based controls being required of pulp and paper mills in Oregon will require controls adequate to meet Oregon's current TCDD standard. Thus, the mills should not incur any irretrievable expenditures during the coming year while EPA completes its TCDD reassessment.

1 action for the Commission is to deny the Petition for Rule
2 Amendment and we urge the Commission to do so.

3 Dated this 10th day of June, 1991.

4
5 Respectfully submitted,

6 Victor M. Sher /RET

7 VICTOR M. SHER

8 Todd D. True /RET

9 TODD D. TRUE

10 Rebecca E. Todd

11 REBECCA E. TODD

12 Sierra Club Legal Defense Fund, Inc.
13 216 First Avenue S. Suite 330
14 Seattle, WA 98014
15 (206) 343-7340

16 Attorneys for American Oceans Campaign,
17 Campaign for Puget Sound,
18 Dioxin/Organochlorine Center, Friends of
19 the Earth, National Audubon Society,
20 Puget Sound Alliance, Washington
21 Environmental Council, and Washington
22 Toxics Coalition.

23 Sent by telecopy to:

24 Chair William P. Hutchison, Jr. (503) 223-5550
25 Vice Chair Emery N. Castle (503) 737-1574
26 Commissioner Henry Lorenzen (503) 276-3148
27 Commissioner Carol A. Whipple (503) 584-2129
28 Commissioner William W. Wessinger (503) 229-4689
29 Director Fred Hansen (503) 229-6124

30 cc: Mr. Larry Edelman
31 Ms. Dana Rasmussen
32 Mr. Rick Albright
33 Ms. Adrienne Allen

1 Because of the availability of chlorine-free technologies,
2 the complete lack of need for chlorine bleached pulp and paper,
3 and the serious and persistent risks to human and environmental
4 health, if the Commission grants the Petition for Rule Amendment,
5 we anticipate returning to urge the Commission to promulgate an
6 ambient water quality standard of zero for 2,3,7,8-TCDD.

7
8 IV. Conclusion

9 On behalf of the organizations listed above, we offer this
10 Memorandum in Opposition to the Petition for Rule Amendment. We
11 will gladly provide the Commission with any of the data discussed
12 above. As we have not had the opportunity to view all the
13 information submitted by the mills, we are unable to respond
14 directly to their particular scientific or other assertions.
15 Should the Commission like us to provide a more detailed response
16 to their specific claims, we will arrange to procure the mills'
17 lengthy submission and provide a detailed scientific analysis for
18 the Commission's review. That being said, however, we believe
19 that the wisest, most protective, and most efficient course of

20 //
21 //
22 //
23 //
24 //
25 //
26 //
27 //

1 There are many technologies available and in use worldwide
2 that reduce and eliminate the use of chlorine or chlorine
3 compounds that are the necessary precursors for all chlorinated
4 organic compounds. Without chlorine or chlorine compounds
5 present in the production process, organochlorines cannot be
6 formed and discharged to the environment. Many European mills
7 and some North American mills currently employ chlorine-free
8 technology in their pulp and paper production. Many if not all
9 the mills in the United States are at the very least exploring
10 ways in which they can reduce their use of chlorine and the
11 subsequent discharge of toxic organochlorines.

12 Furthermore, the public is becoming increasingly aware of
13 the human and environmental health risks associated with chlorine
14 bleaching and is demanding chlorine-free pulp and paper products.
15 The mill in Lyons Falls, New York is one example of a mill that
16 has converted to a chlorine-free technology and has subsequently
17 experienced an increase in its market share. As consumers
18 increasingly demand chlorine-free paper products, those mills
19 that can supply them are enjoying competitive success in the
20 marketplace.

21 As has been long recognized elsewhere, there are no
22 functional uses of pulp and paper products that demand the super
23 bright whiteness normally achievable with chlorine bleaching
24 processes. Non-chlorine bleaching renders pulp and paper
25 products that are nearly as bright white as chlorine bleached
26 products. These chlorine-free products are suitable for every
27 use to which pulp and paper products are put today.

1 We are not the first to suggest to the State of Oregon that
2 the water quality standard for 2,3,7,8-TCDD should be zero. Over
3 the past several years, the United States Fish and Wildlife
4 Service has consistently advised that because of the long-term
5 health effects on wildlife that 2,3,7,8-TCDD discharges be
6 reduced and eliminated:

7 We recommend that the DEQ consider limiting the [pulp and
8 paper mills' National Discharge Elimination System, or
NPDES] permit[s] to a discharge of no dioxins...

9 Letter from the United States Fish and Wildlife Service to the
10 Oregon Department of Environmental Quality dated July 10, 1989.

11 Six months later the Fish and Wildlife reiterated that

12 we believe it is appropriate for DEQ to develop a long-term
13 goal that decreases and eventually eliminates the production
of dioxin and other chlorinated byproducts.

14 Letter from the United States Fish and Wildlife Service to the
15 Oregon Department of Environmental Quality dated January 19,
16 1990.

17 In recognition of the severity of the organochlorine
18 contamination in the Columbia River Basin, the Fish and Wildlife
19 Service most recently explained that

20 considering the longevity of organochlorine compounds and
21 the potential impact of small quantities of dioxins on fish,
22 waterfowl, and endangered species, we recommend that the EPA
strive towards limiting NPDES permits to zero discharge of
dioxins to the Columbia River Basin.

23 Letter from the United States Fish and Wildlife Service to Region
24 10 EPA dated November 21, 1990. The zero discharge standard is
25 the only standard for 2,3,7,8-TCDD that will adequately protect
26 human, wildlife, and environmental health.

1 At this time and given the limited resources of the State,
2 the most logical and protective course of action for the
3 Commission is to deny the Petition for Rule Amendment.

4
5 III. Alternatively, If the Environmental Quality Commission
6 Revisits the Rulemaking Procedure, the Proper Water Quality
Standard for 2,3,7,8-TCDD is Zero.

7 The chlorine bleaching pulp and paper mills insist that new
8 data indicate that the ambient water quality standard for
9 2,3,7,8-TCDD should be loosened. It is our position, and the
10 position of the best scientific experts in the field, that
11 available data militate for a more stringent and protective
12 standard. These data include human reproductive and
13 developmental effects, the effects on wildlife reliant on
14 contaminated ecosystems, and the bioaccumulation,
15 bioconcentration, and persistence of 2,3,7,8-TCDD in animal
16 tissue and sediments. If the Petition for Rule Amendment is
17 granted, we expect that the Commission will find itself in the
18 midst of an extremely involved and complex dispute, with both
19 sides presenting evidence and expert opinion regarding the proper
20 water quality standard for 2,3,7,8-TCDD.

21 If the Commission does indeed elect to reopen rulemaking, we
22 anticipate arguing that the standard for 2,3,7,8-TCDD is properly
23 zero, that is, that the Commission should allow no discharges of
24 2,3,7,8-TCDD at all.

25 //

26 //

27 //

1 Furthermore, the issue of the proper water quality standard
2 for 2,3,7,8-TCDD will be debated shortly in another forum. EPA
3 established the Total Maximum Daily Loadings [TMDL] for the
4 Columbia River on February 25, 1991, regarding the total
5 allowable discharge of 2,3,7,8-TCDD into the Basin. We
6 anticipate legal challenges to the TMDL asserting that the .013
7 ppq standard is inadequate to protect human health and wildlife.
8 In this connection, we believe that the appropriate water quality
9 standard for 2,3,7,8-TCDD is zero, as detailed in Section III
10 below.

11 Furthermore, from an ecosystem perspective it is nonsensical
12 to allow mills in Oregon to discharge bioaccumulative and
13 persistent organochlorines into the Columbia River Basin at 2.3
14 ppq, while Idaho and Washington mills comply with the applicable
15 .013 ppq state standards, a difference of orders of magnitude.
16 Fish, endangered Bald Eagles feeding on them, mink, otter, other
17 wildlife, as well as sensitive human populations such as Native
18 Americans, Asian Americans, and subsistence and sport fishers
19 cannot differentiate among the 2,3,7,8-TCDD contamination from
20 Oregon and that from other states. With regard to these
21 especially sensitive groups, the State of Oregon has a duty to
22 protect all of the people that compose the population of the
23 State. While the .013 ppq standard is not adequately protective
24 of either humans and wildlife, the suggested 2.3 ppq standard is
25 even less so.

26 //

27 //

1 II. The Environmental Quality Commission Should Deny the
2 Petition for Rule Amendment.

3 We strongly urge the Commission to deny the Petition for
4 Rule Amendment filed by James River II and the Boise Cascade
5 Corporation on May 23, 1991. A new rulemaking effort makes
6 little sense in light of the limited resources of the State of
7 Oregon. Indeed, Oregon initially adopted the .013 ppq standard
8 established by EPA's Quality Criteria for Water 1986 with the
9 express realization that the State had insufficient resources to
10 undertake adequately a separate analysis of the health risks of
11 2,3,7,8-TCDD. As the State continues to suffer from limited
12 resources, it continues to be ill-advisable for the State to
13 undertake the complex analysis of human and environmental health
14 risks from 2,3,7,8-TCDD necessary in deciding the water quality
15 standard.

16 The adoption of a water quality criterion or standard is a
17 significant task. EPA regulations mandate that every water
18 quality criteria

19 must be based on sound scientific rationale and must contain
20 sufficient parameters or constituents to protect the
21 designated use. For waters with multiple use designations,
22 the criteria shall support the most sensitive use.

23 40 C.F.R. § 131.11(b)(1)(1990). To adopt a new water quality
24 standard requires that the rulemaking body employ "scientifically
25 defensible methods" in assuring that the most sensitive uses are
26 protected. 40 C.F.R. § 1313.11(b)(1)(1990) Establishing a new
27 water quality standard for 2,3,7,8-TCDD would be extremely
resource intensive, consuming the kind of time and energy that
the State of Oregon has already recognized that it lacks.

1 it is misleading to consider dioxin as a single entity, and
2 the potential health risks are properly evaluated by taking
3 into account exposures to mixtures of the hundreds of
4 isomers and related compounds in this group.⁸

5 An approach, therefore, which focuses on the cancer risks
6 from 2,3,7,8-TCDD necessarily underestimates cancer risks from
7 pulp and paper mill effluent⁹ and also ignores other arguably
8 more important organismic and ecosystem level impacts from
9 2,3,7,8-TCDD such as adverse reproductive, developmental, and
10 wildlife effects.

11 //

12 //

13 //

14 //

15 //

16 ⁸ Silbergeld, Ellen K. and Thomas A. Gasiewicz, Dioxins and
17 the Ah Receptor, American Journal of Industrial Medicine 16:455-
18 474 at 456 (1989).

19 ⁹ EPA itself recognizes that its cancer risk and attendant
20 water quality standard of .013 ppq vastly underestimate the
21 actual cancer risk suffered by certain sensitive populations.
22 EPA estimates that a Native American adult consuming Columbia
23 River Basin fish in an amount average for Native Americans per
24 day contaminated with 6.5 parts per trillion (ppt) 2,3,7,8-TCDD
25 equivalents exceeds the EPA threshold of concern for reproductive
26 effects by over nine times. See, McCormack, Craig and David
27 Cleverly, United States Environmental Protection Agency, Analysis
of the Potential Populations at Risk From the Consumption of
Freshwater Fish Caught Near Paper Mills, Draft Report, April 23,
1990.

Furthermore, in calculating the cancer risk and water
quality standard for 2,3,7,8-TCDD, EPA assumed a fish consumption
rate of only 6.5 grams per day, while actual fish consumption
rates are approximately five times higher than this, and Native
American fish consumption rates are approximately fifteen times
higher. More realistic fish consumption rates, therefore, would
make the cancer risk standards five to fifteen times higher,
respectively. Id.

1 bioaccumulative, bioconcentrative, and persistent.⁶

2 Moreover, while 2,3,7,8-TCDD is the most toxic substance
3 ever identified, and hence the most toxic of the organochlorines,
4 chlorine bleaching pulp and paper production generates tons of
5 chlorinated organics which are toxicologically equivalent to
6 2,3,7,8-TCDD. In other words, these other organochlorines act
7 within the body and the environment in virtually the same
8 toxicological manner as 2,3,7,8-TCDD. For example, in issuing a
9 recent Fish Consumption Advisory for Lake Roosevelt, the
10 Washington State Department of Health recognized that 90% of the
11 dioxin toxicity is due to 2,3,7,8 tetrachlorodibenzofuran.⁷ As
12 one of the leading scientific experts has written,

13
14 Svensson, Bengt-Goran, Anita Nilsson, Marianne Hansson,
15 Christopher Rappe, Bjorn Akesson, and Staffan Skerving, Exposure
16 to Dioxins and Dibenzofurans Through the Consumption of Fish, The
17 New England Journal of Medicine 116:8-12 (1991).

18 Swain, Wayland R., Human Health Consequences of Consumption
19 of Fish Contaminated with Organochlorine Compounds, Aquatic
20 Toxicology 11:357-377 (1988).

21 Tanabe, S., N. Kannan, An. Subramanian, S. Watanabe, and R.
22 Tatsukawa, Highly Toxic Coplanar PCBs: Occurrence, Source,
23 Persistency and Toxic Implications to Wildlife and Humans,
24 Environmental Pollution 47:147-163 (1987).

25 ⁶ The toxicokinetic half-life of 2,3,7,8-TCDD in human
26 tissue has been predicted to be approximately 5 to 8 years and
27 the half-life in sediments is even longer. See, Bowman, R.E.,
S.L. Schantz, N.C.A. Weerasinghe, M.L. Gross, and D.A. Barsotti,
Chronic Dietary Intake of 2,3,7,8 Tetrachlorodibenzo-p-dioxin
(TCDD) at 5 or 25 Parts Per Trillion in the Monkey: TCDD
Kinetics and Dose-Effect Estimate of Reproductive Toxicity,
Chemosphere 18:243-252 at 250 (1989), and Silbergeld, Ellen K.
and Thomas A. Gasiewicz, Dioxins and the Ah Receptor, American
Journal of Industrial Medicine 16:455-474 at 458 (1989).

⁷ Washington Department of Ecology, First Progress Report on
Ecology's Dioxin/Furan Survey in Lake Roosevelt, Memorandum from
Art Johnson, Dave Serdar, and Stuart Magoon to Carl Nuechterlein,
August 8, 1990.

1 2,3,7,8-TCDD is a known human carcinogen, teratogen, and
2 immunosuppressant.⁴ Other types of damage caused by 2,3,7,8-
3 TCDD include skin disorders, reproductive disorders, hormonal and
4 metabolic effects, developmental defects, damage to the liver,
5 kidney and thymus, wasting syndrome, neurobehavioural effects,
6 and learning disabilities.⁵ Furthermore, 2,3,7,8-TCDD is

7
8 ⁴ Some pertinent papers regarding this include:

9 Fingerhut, Marilyn A., William E. Halperin, David A. Marlow,
10 Laurie A. Piacitelli, Patricia A. Honchar, Marie H. Sweeney,
11 Alice L. Greife, Patricia A. Dill, Kyle Steenland, and Anthony J.
12 Suruda, Cancer Mortality in Workers Exposed to 2,3,7,8
13 Tetrachlorodibenzo-p-dioxin, The New England Journal of Medicine
14 324: 212-218 (1991).

15 Schwartz, E., A Proportionate Mortality Ratio Analysis of
16 Pulp and Paper Mill Workers in New Hampshire, British Journal of
17 Industrial Medicine 45:234-238 (1988).

18 Silbergeld, Ellen K. and Thomas A. Gasiewicz, Dioxins and
19 the Ah Receptor, American Journal of Industrial Medicine 16:455-
20 474 (1989).

21 Skene, S.A., I.C. Dewhurst, and M. Greenberg,
22 Polychlorinated Dibenzo-p-dioxins and Polychlorinated
23 Dibenzofurans: The Risks to Human Health: A Review, Human
24 Toxicology 8:173-203 (1989).

25 ⁵ Some pertinent papers regarding this include:

26 Bowman, R.E., S.L. Schantz, M.L. Gross, and S.A. Ferguson,
27 Behavioral Effects in Monkeys Exposed to 2,3,7,8-TCDD Transmitted
28 Maternally During Gestation and for Four Months of Nursing,
29 Chemosphere 18:235-242 (1989).

30 Fish and Wildlife Service, Dioxin Hazards to Fish, Wildlife,
31 and Invertebrates: A Synoptic Review, Biological Report 85, May
32 1986.

33 Jacobson, Joseph L., Sandra W. Jacobson, and Harold E.B.
34 Humphrey, Effects of In Utero Exposure to Polychlorinated
35 Biphenyls and Related Contaminants on Cognitive Functioning in
36 Young Children, Journal of Pediatrics 116:38-45 (1990).

37 Larsson, Ake, T. Andersson, L. Forlin, and J. Hardig,
38 Physiological Disturbances in Fish Exposed to Bleached Kraft Mill
39 Effluents, Wat. Sci. Tech. 20:67-76, 1988.

40 McCormack, Craig and David Cleverly, United States
41 Environmental Protection Agency, Analysis of the Potential
42 Populations at Risk From the Consumption of Freshwater Fish
43 Caught Near Paper Mills, Draft Report, April 23, 1990.

44 Schantz, Susan L., and Robert E. Bowman, Learning in Monkeys
45 Exposed Perinatally to 2,3,7,8 Tetrachlorodibenzo-p-dioxin
46 (TCDD), Neurotoxicology and Teratology 11:13-19, 1989.

1 In specific, the organizations seek to reduce and eliminate
2 entirely the discharge of toxic organochlorines to the waters of
3 the Pacific Northwest, including 2,3,7,8 tetrachlorodibenzo-p-
4 dioxin (2,3,7,8-TCDD), commonly known as dioxin.²

5 We strongly oppose the Petition for Rule Amendment and urge
6 the Environmental Quality Commission to deny the Petition. We
7 are a group of national, regional, and Washington State
8 environmental groups concerned about the water quality of the
9 Pacific Northwest, Oregon, and the water resources shared by
10 Oregon, Washington, and Idaho. The Columbia River receives much
11 of the region's pulp and paper mill organochlorine discharge and
12 for many hundreds of miles is a shared resource and border for
13 Oregon and Washington.³ The ambient water quality standard for
14 2,3,7,8-TCDD in Oregon necessarily affects these shared
15 ecosystems and the livelihood and recreation of those living in
16 both states. We are also concerned with the precedential
17 implications that the Petition for Rule Amendment may have
18 nationwide and for the Pacific Northwest.

19
20
21 ² "Dioxin" as it refers to 2,3,7,8-TCDD is actually a
22 misnomer. Dioxins are a family of approximately 75 separate
23 chlorinated organic compounds, each of which is characterized by
the existence of two oxygen atoms connecting two chlorinated
benzene rings.

24 ³ The interdependence of the Pacific Northwest states with
25 regard to the Columbia River has been recognized by the formation
26 by Oregon and Washington of the Bistate Commission for the
27 Columbia River, and the basin-wide protection strategies for the
River established by the Environmental Protection Agency [EPA],
including the establishment of Total Maximum Daily Loadings and
Individual Control Strategies pursuant to the Federal Water
Pollution Control Act, 33 U.S.C. §§ 1313(d) and 1314(1),
respectively.

RECEIVED

JUN 10 1991

1 VICTOR M. SHER (WSB# 1685.)
TODD D. TRUE (WSB# 12864)
2 REBECCA E. TODD (WSB# pending)
Sierra Club Legal Defense Fund
3 216 First Avenue S., Suite 330
Seattle, Washington 98104
4 (206) 343-7340

OFFICE OF THE DIRECTOR

5
6 BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

7 In the Matter of the Petition of James)
8 River II, Inc. and Boise Cascade)
Corporation to Amend Subparagraph)
9 (2)(p)(B) of Oregon Administrative Rules)
Chapter 340, Division 41, Sections 205,)
10 245, 285, 325, 365, 445, 485, 525, 565,)
605, 645, 685, 725, 765, 805, 845, 885,)
11 925, and 965.)

MEMORANDUM IN
OPPOSITION TO THE
PETITION FOR
RULE AMENDMENT

12 I. Introduction

13 This Memorandum in Opposition to the Petition for Rule
14 Amendment is submitted by the Sierra Club Legal Defense Fund,
15 Inc. on behalf of the American Oceans Campaign, the Campaign for
16 Puget Sound, the Dioxin/Organochlorine Center, Friends of the
17 Earth, National Audubon Society, Puget Sound Alliance, the
18 Washington Environmental Council, and the Washington Toxics
19 Coalition.¹ These organizations are non-profit environmental
20 groups dedicated to and actively working toward the preservation
21 and protection of water resources and all life dependent on them.

22
23
24 ¹ American Oceans Campaign, 4007 Latona Avenue NE Seattle,
WA 98105; Campaign for Puget Sound, P.O. Box 2807 Seattle, WA
25 98111-2807; Dioxin/Organochlorine Center, 1247 Willamette Street
Eugene OR 97401; Friends of the Earth, 4512 University Way NE
26 Seattle WA 98105; National Audubon Society, P.O. Box 462 Olympia,
WA 98502; Puget Sound Alliance, 4516 University Way NE Seattle WA
27 98105; Washington Environmental Council, 5200 University Way NE
Seattle WA 98105; and the Washington Toxics Coalition, 4516
University Way NE Seattle WA 98105.

Thursday, May 2, 1991

Volume 4, Number 18

Congressmen Implore Swift Panel To Enact Interstate Waste Rules

The long-simmering congressional debate on interstate transportation of solid and hazardous waste boiled to the surface during a House Energy and Commerce subcommittee hearing on Tuesday.

Currently, states are essentially precluded by the Commerce Clause of the Constitution from regulating the flow of out-of-state wastes. Worried that this could turn their districts into national dumping grounds, lawmakers from waste importing states have introduced a rash of proposals to give state or municipal governments the right to regulate interstate flows of both hazardous and solid waste.

At the same time, officials from the major exporting states urge caution, saying that legislative curbs on interstate waste trade could slow the development of national recycling

BY DENNIS WAMSTED

markets, and that in many cases the exports are driven by other environmental concerns, such as a desire to protect groundwater resources. Although disagreeing with each other, both sides, as well as several members of the Energy and Commerce subcommittee on Transportation and Hazardous Materials, criticized the Environmental Protection Agency for its listless leadership on this issue over the past 10 years.

The criticism began at the top, with subcommittee chair Rep. Al Swift (D-Wash.) voicing his dis-

(Continued on page 7)

Waxman: EPA Clean Air Act Permit Plan 'Clearly Illegal'

BY CATHERINE COONEY

Rep. Henry Waxman (D-Calif.), chairman of the House Energy and Commerce subcommittee on health and the environment, blasted Vice President Dan Quayle, head of the White House Council on Competitiveness, at a hearing on Wednesday for interfering with the Environmental Protection Agency's proposed Clean Air Act permit rule. "White House officials, spearheaded by Vice President

(Continued on next page)

ORD DRAFTS DIOXIN REASSESSMENT

BY CATHERINE COONEY

The Environmental Protection Agency's Office of Research and Development (ORD) is nearing completion of its plan for reevaluating the agency's risk assessment model for dioxin, and should send the 10-page strategy to Environmental Protection Agency chief William Reilly sometime this week, according to Peter Preuss, one of the ORD officials coordinating the review effort.

Reilly ordered the agency to reevaluate the risk assessment model in an April 8 memo sent to ORD Assistant Administrator Erich Bretthauer. Reilly's reevaluation order was based on the significant amount of new scientific data that has been published recently on the ubiquitous chemical and its impact on human health.

The reevaluation will focus on the "thinking" developed at an international conference held last fall at the Banbury Center at Cold Spring Harbor Laboratory, said Preuss. At the conference, dioxin experts developed a new approach regarding how dioxin reacts in cells: called the receptor-mediated model, it basically recognizes that dioxin must first bind to and then activate a receptor cell before it can become carcinogenic in humans. While many who attended the conference say the new approach implies that there is a level at which dioxin exposure will no longer be considered carcinogenic, Preuss said it is much too soon to predict this. "It would be speculation to say," Preuss said about the implications of the new approach.

The reassessment will look at a variety of the health effects

of dioxin, such as cancer and human developmental problems. The agency plans to look at the views on dioxin from "all of the leading scientists" and will evaluate most of the literature, Preuss said. They will also review current laboratory data on how dioxin effects a cell, as well as develop new data on this. Because EPA believes that some of the data on health effects is insufficient, it will use its Health Effects Research Laboratory in Research Triangle Park, N.C. to develop new data on immunotoxicity and some early biological effects that can be measured. EPA will also look at health data at other U.S. and European labs. "But there are no new contracts now," he added.

Lastly, the agency will have to gather new data on the ecological impact of dioxin, such as its affect on aquatic life, which is still not fully understood.

After Reilly approves ORD's plan, the group will begin directing the research to prepare for its written review. This reevaluation will be written with the help of scientists outside the agency, and should be ready for peer review in a year. Within two years, the final document discussing the receptor-model risk approach will be ready for public comment.

The group will work under ORD's Bretthauer, and includes: Preuss; William Frank, who will oversee the research; and Linda Birnbaum, director of the environmental toxicity division at Research Triangle Park who will oversee the data development. True to Reilly's announced commitment that the process be open, Preuss said all of the documents concerning the reassessment will be available to the public.

Memo to: Environmental Quality Commission
June 7, 1991
Page 3

Based on the above information it would not be the best use of limited state resources to duplicate the present USEPA effort. State resources should be spent in other areas of toxin control such as the development of a comprehensive standard for all biologically and toxicologically active dioxins, furans and PCBs, technology based standards for the control of dioxins and furans in the pulp and paper industry and wood treating industry.

When the USEPA has completed their review of the 2,3,7,8-TCDD criteria, the Department would propose to immediately undertake a review of the standard if it is warranted.

If the Commission does not accept the Department's recommendation, we recommend, in accepting the petition for rule making, that a very specific statement be made regarding current regulatory actions, the items to be considered during the review and the time frame for the review. This would include:

1. The Department would continue all current regulatory activities using the current standards until such time as a new standard was adopted.
2. The re-evaluation of the state standard would be opened at this time, but the review would not be closed until the USEPA had completed its review.
3. The re-evaluation of the 2,3,7,8-TCDD water quality standard would include the review of criteria derivation for the other biologically available dioxins, furans, and co-planar PCBs to address as one standard the pollutants with similar biological/toxicological properties.
4. The Department would move forward to establish technology based standards for the control of dioxins and furans in the pulp and paper industry and wood treating industry.

effects than humans when applying the Oregon water quality standard. In addition, a No Observed Adverse Effect Level (NOEL) has not been established for 2,3,7,8-TCDD. The lowest concentration studied of 38 ppq has resulted in 45% mortality of the trout exposed during the test.

4. According to the most recent USEPA memo to the Department (April 24, 1990) concerning the tracking of state water quality criteria for 2,3,7,8-TCDD there are 25 states with adopted dioxin criteria. Fourteen of the states have adopted standards at or below and 11 above the USEPA criteria level.
5. EPA's Office of Research and Development (ORD) is currently developing a review strategy which we expect to be released on or around June 14, 1991 (attachment 1). The strategy is expected to include greater detail on the scope and timing of the EPA review. This could shed additional light on the national review and the type of information it will develop. This would be very germane to a decision on the petition and the type of review to be conducted by the state.
6. There has not been new peer reviewed published information within the last five to six months since the Department has reviewed the standard, that would cause the Department to recommend a change to the standard. An epidemiological study has been published in The New England Journal of Medicine which links occupational exposure of 2,3,7,8-TCDD to an increase in the rate of mortality due to cancer (Fingerhut 1991). A new method to estimate the bioaccumulation factor has been forwarded to the Department but this method does not appear to be suitable for use in water quality criteria development. The Department is involved in projects or aware of projects which should provide specific information on bioaccumulation in riverine systems as well as fish consumption rates of Native Americans along the Columbia River.
7. William Riley, Administrator EPA, stated in a memo dated April 10, 1991 announcing the review of the 2,3,7,8-TCDD criteria that regulatory actions concerning 2,3,7,8-TCDD should go forward.
8. On-going litigation based on the current standard is not expected to be resolved soon.

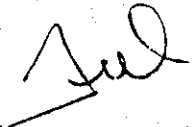
STATE OF OREGON

DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE MEMORANDUM

DATE: June 7, 1991

TO: Environmental Quality Commission

FROM: Fred Hansen, Director 

SUBJECT: Petition for Rule Amendment: Water Quality Standard
2,3,7,8 - TCDD

The Department would recommend to the Commission that the petition for rule making regarding the water quality standard for 2,3,7,8 - TCDD be denied. The denial at this time is based on several factors including:

1. The Department is in the process of completing the triennial review of the state's water quality standards. The standard for 2,3,7,8-TCDD was evaluated during this process. The Department, after careful review of the criteria, recommends to retain the standard as adopted in 1987.

The Department reviewed all of the factors used to derive the criteria with special attention to three of the factors. These three factors were cancer potency, bioconcentration, and fish consumption. Various numbers have been forwarded for revision of all three of the factors. Review of the published literature indicated that the 0.013 pg/l water quality standard was an appropriate standard. When considering the possible changes to the cancer potency factor, the bioconcentration factor, and the fish consumption rate the 0.013 pg/l standard is an appropriate standard.

2. Since the Department's review of the water quality standard during the fall of 1990 the USEPA has announced that they will be conducting a review of the criteria. The USEPA expects to complete the review in one to two years. The agency expects to address wildlife, aquatic life, and human health issues related to the criteria. The agency is expected to review carcinogenic and reproductive effects to humans, wildlife and aquatic life; the rate of bioaccumulation; and, fish consumption rates.
3. Any review of the 2,3,7,8-TCDD standard which addresses wildlife and aquatic life risks could well result in a criteria value lower than the present Oregon standard. It should be noted that piscivorous wildlife have an increased risk of cancer mortality and reproductive

additive effects caused by exposure to dioxin in tandem with other toxic pollutants.

Industry is fond of pointing out that the risk to humans from dioxin is far less than to lab rats, for which dioxin is clearly a hazard. Presumably industry would include other 'lower life forms' in its assessment of the hazards of dioxin. This is relevant to the Commission's decision because, whether or not the existing criterion for dioxin adequately protects human beings, it certainly does not take into account the increased effects dioxin has on wildlife. These effects are increased due to the lower body weight and greater consumption of contaminated aquatic life (e.g. fish) by eagles, mink, otter, and other piscivorous wildlife. States' water quality standards are supposed to protect the most sensitive beneficial uses. The Commission should not even consider this or any other petition to change the dioxin standard unless petitioners can demonstrate that a higher level of dioxin contamination will not result in a lower level of protection for the most sensitive uses.

It is an old ploy of industry's to seek to have the rules changed when it doesn't want to meet them. It is inexcusable when government accedes to this. The Commission should enforce the standards it has adopted, not bend them when the going gets tough for a segment of industry which has had the benefit of over-polluting public waters for many years.

Sincerely,



Nina Bell
Executive Director

cc: Emery N. Castle
Henry Lorenzen
Carol Whipple
William W. Wessinger

NORTHWEST ENVIRONMENTAL ADVOCATES



June 10, 1991

Fred Hansen, Director
Oregon Department
of Environmental Quality
811 S.W. Sixth
Portland, OR 97204

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

RECEIVED

JUN 10 1991

Bill Hutchinson, Chair
Oregon Environmental Quality
Commission
Tooze, Shenker Holloway, & Duden
333 SW Taylor St.
Portland, OR 97204

OFFICE OF THE DIRECTOR

Re: Notice of Consideration of Petition for Rule Amendment
(Water Quality Standard for 2,3,7,8-TCDD)

Dear Fred and Bill:

I am writing to urge the Commission to deny the pulp and paper industry's petition to change the criterion in the water quality standard for dioxin. There are numerous reasons for the Commission not to take up this issue, not the least of which is the fact that the Department recently reevaluated this standard in its most recent "triennial review." In addition, as I am sure you are aware, U.S. EPA is reexamining the criterion.

It would be redundant for the State of Oregon to reevaluate the very same issue that EPA is currently reviewing, and Oregon is certainly less well equipped to do so. It is also premature to second guess the outcome of that evaluation. In fact, EPA Administrator Reilly has urged that regulatory actions based on the existing dioxin criterion proceed as scheduled.

For as many reasons as the pulp and paper industry can come up with to argue for an increase in the allowable limits for dioxin, there are at least an equal number of arguments that the existing standard is not conservative enough. For example, the current criterion is based on a bioconcentration factor of 5,000. Yet studies show that the bioconcentration factor in fish can range up to 156,000. The existing dioxin standard does not take into account the other media by which dioxin contaminates human beings, i.e. inhalation, eating food other than fish. General human background exposure to dioxin compounds (1 to 10 parts per kilogram (equivalent to part per quadrillion) in toxicity equivalent units for all dioxins) is known to already exceed the acceptable daily intake set by EPA for protection against reproductive effects (1 part per quadrillion). In addition there are the synergistic and

Greenpeace Demands

Enough research exists to prove that dioxin is extremely toxic and persistent, and that levels in our environment and in human milk are increasing. Given that many health effects occur from exposure to even minute quantities over time, and that widespread contamination of our environment and the build-up of these chemicals in the food chain has already led to dangerously high levels in human milk and in marine mammals, all energy must be devoted toward preventing any further releases of dioxins into the environment.

The elimination of man-made dioxin sources would go hand-in-hand with the elimination of a much larger group of environmentally dangerous organochlorines, which would be extremely desirable from an overall environmental point of view.

Elimination of all dioxin sources would mark a turning point in our dealings with pollution control, since a holistic approach would have to include the phase-out of an entire class of anthropogenic chemicals presently discharged in large quantities into the environment.

In 1983, after two years of research, the Ministers' Expert Advisory Committee on Dioxins stated that ¹⁵:

"Regardless of arguments about the significance of species differences in sensitivity, the validity of risk assessments, and other uncertainties which may take years to resolve, it is quite clear that dioxins are very unpleasant things to have in our environment and the less we have of them the better. It is, in fact, imperative to reduce dioxin exposure to the absolute possible minimum."

Despite these recommendations, the Canadian government has failed to eliminate even such outstanding dioxin sources as pentachlorophenol, but has instead actually added new dioxin sources to the Canadian environment by building further municipal and hazardous waste incinerators.

Canadian government follow the leadership provided by forward thinking European governments, and:

establish a five-year plan to eliminate all known industrial dioxin sources,

and in particular:

- ban import and use of chlorophenols immediately;
- establish an indefinite moratorium on construction of new municipal and hazardous waste incinerators;
- phase out disposable products made of PVC or PVDC;
- phase out PVC coating of copper wire;
- phase out chlorinated solvents;
- eliminate the use of chlorine

ry and metallurgical industry;

- establish a mass-balance of chlorine and organochlorines in Canada; i.e. determine the amount of chlorine gas and organochlorines produced, and their fate in the environment. This mass balance should extend to other halogens and organohalogens;
- commission a feasibility study on phase-out of all production and use of organochlorines.
- Fund research to find clean production technologies and alternatives to chlorinated products, as well as safe methods of destroying the existing piles of dioxin and other chlorinated waste.

This paper was researched and written by Renate Kroesa, M.Sc., Toxic Project Co-ordinator.

REFERENCES

- 1) Report from Conferences, the 5th Int'l Dioxin Symposium, Bayreuth, 1985; Chemosphere, 1986, 15, N1-2.
- 2) This entire section is based on the following five overview reports/books published on the toxicology of dioxin. All reports/books give an excellent overview and provide many detailed references to the interested reader.
 - a) 'Human Health Aspects of Exposure to PCDDs and PCDFs': UAREP, Bethesda, Maryland, June 1988 (funded by the American Paper Institute).
 - b) 'The Chemical Scythe', by Alistair Hay; Plenum Press 1982.
 - c) 'A Cancer Risk-Specific Dose Estimate for 2,3,7,8-TCDD'; US-EPA/600/6-88/007Ab, June 1988, plus Appendices A-F.
 - d) 'Dioxins in the Environment' by the UK Dept of the Environment; Pollution Paper No. 27, 1989.
 - e) S.A. Skene et al, Human Toxicol, 1989, 8, 173-203.
- 3) P.M. Mehrie et al, Environmental Toxicology and Chemistry, 1988, 7, 47-62.
- 4) F. Rohleder, Presentation to the 9th Int'l Dioxin Symposium, Toronto, 1989.
- 5) T. Sinks, Presentation to the 7th Int'l Symposium on Epidemiology in Occupational Health, Tokyo, 1989.
- 6)
 - a) R.E. Bowman et al, Neurotoxicology, 1986, 7, 637-650.
 - b) J.R. Allen et al, Toxicology and Applied Pharmacology, 1979, 48, A180.
 - c) J.R. Allen et al, Bulletin of Environmental Contamination and Toxicology, 1979, 21, 463-469.
- 7) 'Who do you believe?', Jock Ferguson; Chemosphere, 1985, 14 791-796.
- 8) PCBs, PCDDs and PCDFs in Breast Milk: Assessment of Health Risks; WHO, Regional Office for Europe; EH 29 (1988).
- 9) W.R. Swain; Aquatic Toxicology, 1988, 11, 357-377.
- 10) Monitor 1988, Sweden's Marine Environment - Ecosystems Under Pressure; National Swedish Environmental Protection Board.
- 11)
 - a) R.R. Bumb et al (Dow Chemical), Science, 1980, 210, 385.
 - b) Nestrick et al (Dow Chemical), Chemosphere, 1983, 12, 617-626.
- 12) J.M. Czuczwa, R.A. Hites, Chemosphere, 1986, 15, 1417-1420.
- 13)
 - a) A. Schector et al, Chemosphere, 1988, 17, 627.
 - b) A. Schector et al, poster at the 9th Int'l Dioxin Symposium, Toronto, 1989.
- 14) W.V. Ligon et al (General Electric), Environ. Sci. Technol. 1989, 23, 1286-1290.
- 15) Report of the Joint Health and Welfare Canada/Environment Canada Advisory Committee on Dioxins, November 1983.

GREENPEACE

Founded in Canada, 1971

Fondé au Canada, 1971

Vancouver

1726 Commercial Drive,

Vancouver

British Columbia

Canada V5N 4A3

☎ 604 253-7701

FAX 604 253-0114

Toronto

578 Bloor Street West

Toronto, Ontario

Canada M6G 1K1

☎ 416 538-6470

Fax 416 538-6479

Montréal

2444 Notre-Dame Ouest

Montréal (Québec)

Canada H3J 1N5

☎ 514 933-0021

Fax 514 933-1017

lar exposure through mother's milk.

Scientists will never be able to prove a link between health effects at a later stage in life to any toxic chemicals present in mother's milk or to exposure to these toxins in utero, simply because babies do not grow up in controlled environments such as a laboratory.

Who is at Risk?

Obviously, the human baby is of most concern when it comes to human health effects. But what about the entire environment? Despite all the money spent and all the papers published, we know very little about dioxin's effect on an entire ecosystem. It seems likely that animals and birds with a fish-based diet will suffer most.

The Baltic gray seal is a case in point. In the mid-seventies it was found that only 20 percent of the mature female gray seals were fertile.¹⁰ This is commonly thought to be caused by PCBs in the Baltic food chain; and PCBs, as we know, react through the same protein receptor as dioxins.

Fertility is not the only effect linked to PCBs in the seals' diet: over 75% of the seals found dead in recent years have been found to have intestinal ulcers and kidney damage. Roughly half the female gray seals also had uterine tumors. Often, even the living display these same diseases. Interestingly, when seals are raised with a diet of less contaminated fish caught outside the Baltic, the seals are able to reproduce. Yet, this fact is often excluded in discussions about toxic effects of PCBs and dioxins, and seldom mentioned in official government or industry brochures.

Clearly, the solution to such environmental problems cannot be to place Baltic seals or beluga whales or fish-eating birds into a sanctuary and feed them less contaminated fish. Neither can the solution be to forbid breastfeeding. It is essential, then, to prevent any further build-up of these insidious chemicals in the food chain. This can only be achieved by immediate elimination of all sources of dioxins.



The Sources and Elimination Strategies

While the production of PCBs was finally outlawed worldwide, and the worry now is how to eliminate existing PCB wastes, dioxins and furans seem to come from many different and ongoing sources. Yet there is an obvious common denominator to these sources: modern society's use of chlorine.

It is often claimed that dioxin is a naturally occurring toxin, produced in forest fires and wood stoves. This theory, first introduced by Dow Chemical scientists as the 'Trace Chemistry of Fire' theory¹¹, has been convincingly disclaimed by at least three separate studies:

- a) the Czuczwa study, which investigated contamination of Great Lakes sediments, found that dioxin levels were virtually non-existent prior to the Second World War, which coincides with the beginning of large-scale production and combustion of organochlorines.¹²
- b) the Inuit mummy study, in which A. Schector investigated tissue of two 400-year-old mummies. Only minor amounts of the less toxic but very persistent octa-chlorodibenzo-p-dioxin (OCDD) were found.¹³

- c) the Chilean mummy study, in which W.V. Lignon analyzed tissue of nine Chilean mummies for dioxins and furans. Again, only minor amounts of OCDD were found.¹⁴

All three studies conclude that rising dioxin levels are intimately linked to modern industrialized society. Box 3 lists strategies to eliminate major industrial sources of dioxin, all of which are connected with the use of elemental chlorine as well as the production and combustion of chlorinated organic chemicals (organochlorines).

Elemental chlorine does not exist in Nature, and Nature does not produce organochlorines on a large scale either, with the exception of some very simple molecules, such as methylchloride or dichloromethane.

Many of the industrial dioxin sources are easy to eliminate.

Chlorophenols, for example, are already banned in many European countries. Sweden actually experienced a decline of dioxin levels in human milk after banning both pentachlorophenol and chlorophenol-based herbicides.

Both Canada and the United States actively resist such a ban, and chlorophenols are still used for wood preservation (utility poles and railway ties) and as a fungicide on lumber destined for export. Once treated, these

sources of dioxin when burnt in wood stoves or incinerators.

Municipal incinerators are another very significant but completely avoidable source of dioxins. They not only generate vast amounts of dioxin-laden ash but also emit dioxins into the atmosphere where they can be transported over long distances, e.g. to the Arctic. The disposal of toxic incinerator ash has become a highly publicized problem since export schemes to Panama and other developing nations were exposed by Greenpeace.

Incinerators should be eliminated for other environmental reasons as well. Incinerators are not compatible with recycling systems, since comprehensive recycling systems eliminate cheap fuel from the waste stream, e.g. paper or plastics, thus eliminating the economic viability of incinerators.

Copper reclamation plants and hospital waste incinerators are also major dioxin sources due to the burning of PVC (polyvinylchloride) and PVDC (polyvinylidene-chloride) waste. Copper wires are coated with PVC, and many hospital disposable items are made of these chlorinated plastics, as are many disposable household products.

Many West German cities, e.g. Bielefeld, Munich, Aachen and others, have now banned the use of PVC ma-

public and fire fighters from dioxin formed during fires. The Danish government is actively pursuing a phase-out of all PVC articles, and is presently researching a feasible time-table.

The Swedish government is pushing for a phase-out of chlorinated solvents, due to the risks they pose to ground water supply, their effects in the lower atmosphere, and the associated waste disposal problems.

The pulp and paper industry as well as certain branches of the metallurgical industry are significant sources of dioxin due to the use of raw chlorine. Chlorine gas reacts with wood compounds or carbon electrodes to form dioxins. European governments are researching and implementing new production processes that would ban the use of chlorine and thus the generation of dioxin as well as other toxic organochlorines.

It is clear that eliminating these sources of dioxin means eliminating a much larger portion of toxic chemicals from our environment. This makes a lot of sense from an environmental point of view, because dioxins never come alone, but are always accompanied by other toxic organochlorines.

Dioxin indeed is only the tip of an iceberg of environmentally dangerous organochlorines and other organohalogenes; and successfully eliminating

inevitably mean eliminating this iceberg, which is exactly the reason environmentalists are becoming more and more vocal in this matter. To Greenpeace, dioxin is a symbol of whether we want to deal with our pollution or whether we want to continue our self-destructive lifestyle.

The Politics – Whose Interests Are At Stake?

Obviously, when the entire organohalogen production is being questioned, some very powerful interest groups want to have a say. Much is at stake, both in terms of liability law suits and lost profits.

It would be naive to think that the chlorine- and organochlorine-producing industry, e.g. PVC and chlorinated solvents or pesticide producers, have had no influence on the colour of dioxin science. Other vested parties to name include the incineration lobby, the pulp and paper industry and the metallurgical industry. Even defense departments are involved in the discussion, due to the use of Agent Orange in Vietnam and elsewhere.

The result: instead of devoting research efforts toward eliminating the sources, finding alternative products or production technologies, and safe methods of dealing with the existing wastes, the public is being deluged with attempts to linguistically detoxify dioxin, via media releases, information brochures and widely publicized risk assessments.

Risk assessments, in particular, can at best only be viewed as pseudo-scientific exercises, because they do not take into account:

- total exposure from all possible sources
- synergistic effects
- effects on the next generation, for example through contaminated human milk
- all possible health effects, rather than selected health effects only, e.g. certain forms of cancer.

<u>SOURCE</u>	<u>ELIMINATION STRATEGY</u>
a) PRODUCTION OF ORGANOCHLORINES, e.g.	
* chlorophenols and chlorobenzenes	ban production and use immediately
b) COMBUSTION OF ORGANOCHLORINES, e.g.	
* car exhaust, leaded gas	don't add org. chlorine scavengers (use unleaded gas)
* municipal waste incinerators	comprehensive recycling
* hazardous waste incinerators	waste reduction/elimination and use other destruction methods
* copper reclamation	eliminate PVC coating
* steel recycling	no chlorinated rubber/plastics to be used in car or machinery
c) USE OF CHLORINE GAS, e.g.	
* pulp and paper industry	less bleaching and bleaching with oxygen/H ₂ O ₂
* zinc/magnesium smelters	use chlorine-free process

Recently it has become possible to determine actual dioxin body burdens through analysis of blood serum, and some exposed cohorts investigated earlier, e.g. Vietnam Veterans and occupationally exposed workers, are being re-analyzed. However, individuals in these cohorts who have died since the original study was conducted are invariably excluded from these new studies.

f) Reproductive Effects

More subtle than chloracne or cancer are other health effects such as reproductive failure. It is striking that reproductive failure has been observed in all animal species tested, be it fish, bird or mammal. It is therefore highly likely that reproductive failure also occurs in humans exposed to dioxin.^{2c}

Most disturbing are laboratory experiments on primates such as rhesus monkeys, whose reproductive systems were found to be extremely sensitive to dioxins when administered in minute doses on a daily basis. Researchers found a serious decrease in sperm count in exposed males, and an inability to conceive or carry the pregnancy to term in exposed females.^{2d,6}

Some evidence of such reproductive failure in humans already exists. Jock Ferguson, a Canadian reporter who investigated health effects in occupationally exposed workers, once interviewed three Hooker Chemicals workers, all of whom suddenly came to realize that none had fathered children.⁷ Why is it that incidences like these are always dismissed immediately as anecdotal evidence, and are not followed up in a formal investigation, e.g. an epidemiological study, whereas negative findings are always promoted as certainty?

Other reproductive effects observed in laboratory animals include stillbirths and birth defects. Dioxin has been linked to spina bifida, anencephaly (absence of brain) and cleft palate.²

g) Suppression of the Immune System

Perhaps most frightening of all are the effects dioxin has on the immune system. The thymus, a gland that is of utmost importance to the immune sys-

tem, is one of the main targets of dioxin. It has been shown in laboratory animals that one of the first signs of dioxin poisoning is thymic atrophy.^d

The human thymus develops at 9 weeks of gestation and disappears at puberty, at the age of 10 to 12. It seems that the thymus is not required for the maintenance of effective immune function in adults, since human T lymphocytes have a life-span of 15 - 20 years, and there is little replacement for them during adult life.^{2d}

But what about children, and even worse, what does thymic atrophy do to nursing babies?

h) Behavioral Changes in Offspring and Minimum Effect Levels

A number of health effects have been noted at doses comparable to those producing cancer. Very few of the studies, however, have produced clear No Observable Effect Levels. This is particularly true of long-term studies in rodents and rhesus monkeys.^{2e}

The available evidence suggests that No Observable Effect Levels for some of the immunologic and reproductive effects in rhesus monkeys are well below 1 ng/kg/day.⁶ Behavioral changes in the offspring, for example, were observed in rhesus monkeys when exposed to dioxin levels in the diet as low as 0.12 parts per trillion.^{6a}

Box 2 shows how these Minimum Effect Levels for immunotoxic, reproductive and carcinogenic effects, as observed in various animal species, compare to the average daily intake of nursing babies in the western industrialized world.^{2d,8}

Dioxins in Human Milk

An average breast-fed baby in industrialized countries already ingests up to 100 times more dioxin than the World Health Organization (WHO) deems tolerable for a healthy adult.⁸ The margin of safety, that is the difference between the levels of dioxin we expose our babies to and those that we know will cause adverse effects in laboratory animals, is on the order of ten to non-existent. Babies in heavily contaminated areas are already exposed to dioxin levels that are certain to induce toxic effects in laboratory animals.

Aside from dangerously high levels of dioxins and furans, mother's milk also contains other toxic chlorinated chemicals, such as PCBs, hexachlorobenzene, and polychloronaphthalenes to name a few. Yet no research has been done on the likely synergistic effects of these compounds.

Further, some scientists believe that exposure in utero from transplacental migration may have important effects on brain development, and thus may

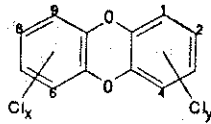
Minimum Effect Levels and Tolerable Daily Intake of Dioxin, expressed in equivalents of 2, 3, 7, 8-TCDD (TEQ), compared to the Average Daily Intake by a nursing baby in industrialized countries. (2d,8)

EFFECTS	MEL (lab.tests) ng/kg bw/day	ADI (nursing baby) ng/kg bw/day
immunotoxic	6 (guinea pig)	around 0.1
reproductive	0.12 (primates)	
carcinogenic	10 (rats)	
	TDI pg/kg bw/day	ADI pg/kg bw/day
Sweden	1-5	
Canada	10	
USEPA	0.006	100
USFDA	0.06	
WHO	1	

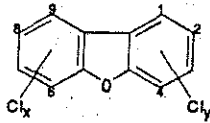
Box 2

INTERNATIONAL TOXICITY EQUIVALENCY FACTORS (I-TEFS)

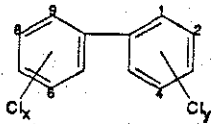
	I - TEF
2,3,7,8-TCDD	1
1,2,3,7,8-PeCDD	0.5
1,2,3,4,7,8-HxCDD	0.1
1,2,3,7,8,9-HxCDD	0.1
1,2,3,6,7,8-HxCDD	0.1
1,2,3,4,6,7,8-HpCDD	0.01
OCDD	0.001
2,3,7,8-TCDF	0.1
2,3,4,7,8-PeCDF	0.5
1,2,3,7,8-PeCDF	0.05
1,2,3,4,7,8-HxCDF	0.1
1,2,3,7,8,9-HxCDF	0.1
1,2,3,6,7,8-HxCDF	0.1
2,3,4,6,7,8-HxCDF	0.1
1,2,3,4,6,7,8-HpCDF	0.01
1,2,3,4,7,8,9-HpCDF	0.01



chlorinated dibenzo-p-dioxins



chlorinated dibenzofurans



chlorinated biphenyls (PCBs)

Box 1

c) Long-Term Toxicity: The Dioxin-Receptor

More worrisome than the high acute toxicity are the more insidious long-term effects of exposure to sub-lethal doses of dioxin. Daily doses 1,000 times below the lethal dose, the parts per trillion range, cause profound delayed effects in mammals, such as cancer, damage to the immune system, and reproductive failure.^{2c}

Concentrations in water another 1,000 times lower, the parts per quadrillion range, can still cause a wide variety of toxic effects in fish, e.g. in rainbow trout.³

Scientists believe that the reason why dioxin is so toxic in minute quantities lies in its mode-of-action inside the cell. Dioxin imitates natural steroid hormones (e.g. estrogen) in our bodies. Dioxin fits into a protein receptor, which normally responds to these steroid hormones. The receptor then transports the dioxin directly into the cell nucleus, where it interacts with basic cell chemistry.^{2a}

The 'dioxin-receptor' has been identified in laboratory animals as well as in humans. One can compare this mode-of-action with dioxin acting as a key to the receptor-lock. Some individual dioxins and furans fit better into the receptor than others; PCBs do not fit as well. 2,3,7,8-TCDD fits best into

this receptor and consequently is the most toxic.

d) Chloracne

The disfiguring skin disease chloracne is often erroneously referred to as the only human health effect positively linked to dioxin exposure, and is often down-played in its severity. Yet, chloracne is always accompanied by other health effects, such as chronic weakness in the legs, severe pain in the joints, headaches, pronounced fatigue and irritability, and often lasts for decades, as several studies on occupationally exposed workers show.^{2b}

e) Cancer

2,3,7,8-TCDD is the most potent carcinogen tested to date.² Researchers so far have been unable to clarify whether dioxin acts as a co-carcinogen or whether it suppresses the immune response to other carcinogens. Yet given the fact that other carcinogens are plentiful in our polluted environment, that question can be of academic interest only.

Does Dioxin Cause Cancer in Humans?

Much discussion has focused on whether 2,3,7,8-TCDD is a human carcinogen. Some evidence exists to support such a claim, but there are also indications that this discussion has not been without bias.

One of the best analyzed groups of exposed humans are chemical workers who produced 2,4,5-T (Agent Orange). The West German chemical company BASF experienced an explosion in 1953, which exposed workers to relatively high doses of dioxin TCDD. Many of the workers subsequently suffered from chloracne.

At the 1989 International Symposium on dioxin and its toxic effects, West German scientist F. Rohleder presented a re-analysis of these exposed BASF workers and found significantly elevated levels of respiratory cancer and cancer of the digestive system.⁴

Most disturbingly, Rohleder found that earlier studies, paid for by BASF itself, were fraudulent: non-exposed workers had been deliberately added to the 'exposed' cohort, and truly exposed workers, some of whom were displaying chloracne, had been deliberately excluded from the study.

Evidence that PCBs may be carcinogenic in humans is also mounting. A cancer study by the Cincinnati National Institute for Occupational Safety and Health found that Westinghouse workers in Bloomington, Indiana experienced a more than two-fold increase in mortality from brain cancer and a four-fold increase in deaths from skin cancer.⁵

The Shortcomings of Epidemiology

The reason clear proof of dioxins' and PCBs' carcinogenicity in humans does not exist, and may never exist, lies in some important short-comings of any epidemiological study: the humans investigated are exposed to many more toxic influences than just dioxin, and it will always be possible to point the finger at other factors possibly causing the disease. This poses an ethical dilemma, since it is impossible to raise humans in controlled environments such as a laboratory.

Further, epidemiological studies carried out so far rarely have verified the actual exposure of the presumed exposed versus the unexposed control group. That fact is probably the single most important reason why the findings of epidemiological studies carried out so far contradict each other so much.

DIOXINS, FURANS AND PCBs: THE TRUE STORY

Dioxins, furans and PCBs have become some of the most controversial chemicals of modern society. Dioxin in particular has been labelled the most toxic chemical ever produced by man. More than \$1 billion has been spent so far on dioxin research¹, yet at the same time, industry and government officials insist that not enough evidence on the toxicity exists to justify elimination of the sources.

This paper explores some of the myths and facts surrounding these environmentally dangerous chemicals and explains why the scientific debate has become of an increasing political nature.

What Are 'Dioxins'

The term 'dioxins' usually refers to a whole chemical family with 75 individual members, which more correctly should be termed chlorinated dibenzop-dioxins. The most toxic member of this family is 2,3,7,8-Tetra-Chloro-Dibenzo-p-Dioxin, often abbreviated as 2,3,7,8-TCDD.

Often, the term 'dioxins' also includes a closely related chemical family called chlorinated dibenzofurans. The most toxic among the 135 known furans is 2,3,7,8-Tetra-Chloro-Dibenzo-Furan (TCDF), which is one tenth as toxic as the corresponding dioxin, TCDD.

Of the 210 dioxins and furans, twelve are extremely toxic and are commonly referred to as the 'Dirty Dozen'. Their individual toxicity is ranked by comparing them to 2,3,7,8-TCDD via internationally agreed upon Toxic Equivalence Factors (TEFs). Box 1 (next page) shows the chemical structures of dioxins and furans, and their toxicity ranking.

PCBs are another chemical family closely related to dioxins. Due to their similar chemical structure, some PCBs can act through exactly the same pathways in organisms as dioxins, but are much less potent. However, due to their chemical nature, PCBs are inevitably contaminated with furans and dioxins, and will form these more toxic chemicals during fires.

How Toxic Are Dioxins ²

a) Extreme Ability to Kill
Dioxin TCDD is the most toxic man-made chemical ever tested on laboratory animals. Acutely lethal doses are measured in micro-grams per kilogram animal weight, in the parts per billion range. ^{2c} Though the lethal dose varies considerably from species to species, dioxin has been found to be extraordinarily toxic to all species tested.

Characteristic of lethal dioxin exposure is the 'wasting syndrome': animals seem to waste away, and eventually die, without displaying any overt pathological symptoms. The exact reason



why dioxin can cause death in these minute quantities is not yet known. ^{2e}

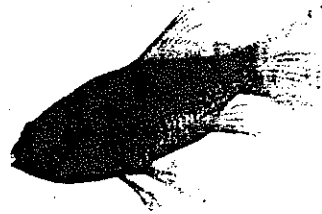
b) Extremely Bio-Accumulative
Dioxins are some of the most persistent and bio-accumulative man-made chemicals released into the environment. While dioxins can be broken down under certain conditions, in particular when exposed to intensive sunlight, they cannot be broken down once absorbed by soil or dust. When they enter the food-chain, they will bio-magnify, often to levels many thousands of times higher than their surroundings. ^{2d,3}

It is this combination of dioxin's extreme toxicity and its bio-magnification in the environment that makes Greenpeace believe that there can be no safe level of dioxin emissions.



**THINK TWICE BEFORE YOU BUY
WHITE, AND SUPPORT GREENPEACE
IN ITS DEMANDS FOR**

- Complete elimination of all chlorine-based bleaching chemicals.
- Use of the right fiber for the right product, i.e. the use of off-white kraft and off-white sulphite pulp, or completely unbleached pulp whenever possible.



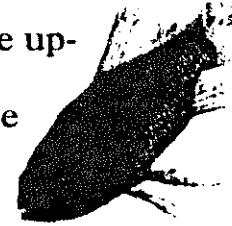
CHLORINE-FREE BY 1993!

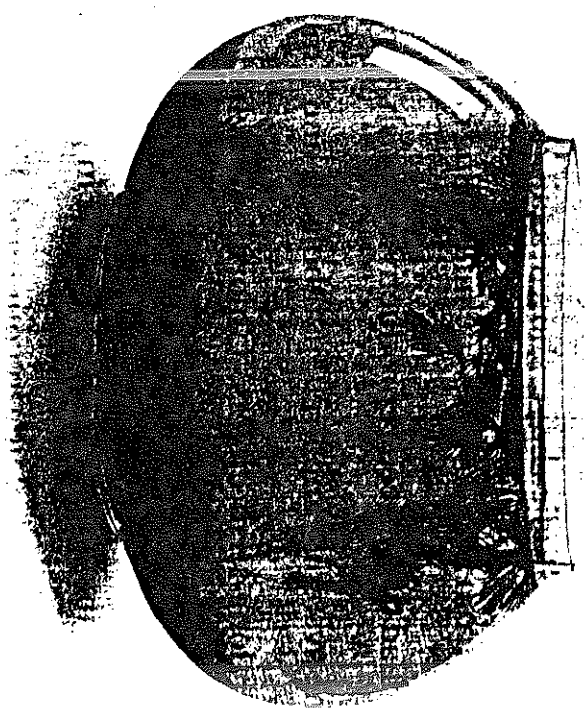
For more information about different pulp and paper making technologies and their impact on the environment, please ask us for the Greenpeace Guide to Paper.

Chlorine-bleached pulp is bad for the environment. There can be no doubt about that. Studies have shown again and again that effluents from kraft or sulphite mills using chlorine technology lead to reduced reproductivity in fish, suppressed immune systems, impaired metabolism, and a multitude of other long-term effects. Chlorine-bleached paper is so bad for you. Many of the chlorinated poisons discharged by the mills will also be found in paper - like the page you are now holding in your hand. Even dioxin, one of the most toxic chemicals ever produced, is likely to be present in this chlorine-bleached paper. Dioxin has been shown to leach from bleached paper products, such as milk cartons and coffee filters. Yet, dioxin is only the tip of the iceberg when it comes to organochlorine pollution from pulp and paper mills. Up to 1,000 different chemicals can be found in the effluent of mills employing chlorine-bleaching. Many of these cause cancer or genetic damage



and are persistent and accumulate in the environment. On average, pulp mills discharge around 35 tons of toxic organochlorines every single day. Even those mills that already have upgraded their process to reduce the formation of the most notorious organochlorine, dioxin, will still discharge between 10 and 20 tons of other chlorinated poisons every single day. These discharges must stop now. The page you are now reading was printed on sulphite pulp bleached with oxygen-based agents. Such chlorine-free bleaching technology is readily available and must be employed immediately by mills using the sulphite process. Chlorine-free bleaching technology available for kraft mills will yield a cream-colored pulp. That brightness is entirely sufficient for most purposes, particularly since kraft pulp is mainly used in paper products that need to be strong, not white, such as packaging, stationery or envelopes.

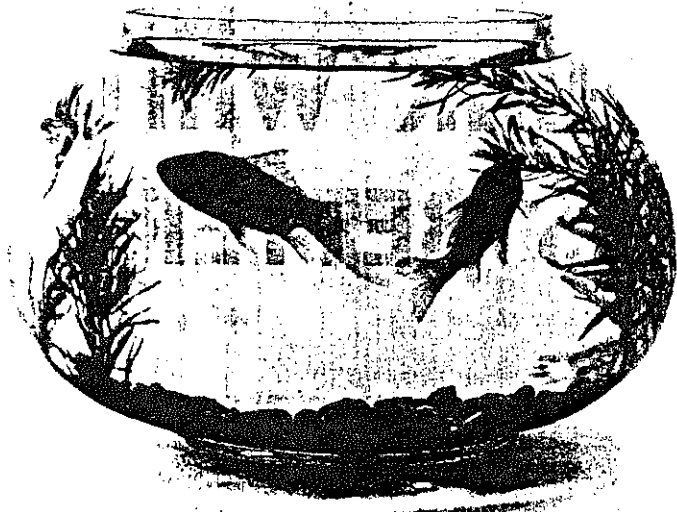




**A SMALL
DIFFERENCE
TO YOU...**

**...MAKES A
BIG DIFFERENCE
TO OTHERS.**

...THINK AGAIN.



This paper is white. It was bleached with oxygen.



This paper is whiter. It was bleached with chlorine.

**IF YOU
THINK WHITER
IS BETTER...**

● GREENPEACE

Standard Unlikely to Exceed 1 PPQ

EPA's Science Advisory Board, told the EQC this summer, "When it comes to dioxin, there are a lot of uncertainties; there are no silver bullet answers."

Whatever else is decided, a few conclusions can be drawn. First, no single factor will be changed in isolation. Both DEQ and EPA are committed to a full review all the factors, not just the just the cancer potency, bio-concentration, or fish consumption numbers. Second, even if adjustments are made, it appears the final standard will remain below a single part per quadrillion, far below the detectable limits of today's instruments. Third, under all the scenarios presented, it appears the Columbia River will remain "water quality limited," forcing the mills to make expensive improvements to control dioxin.

Status & References

If approved by the EQC Nov. 1, eight public hearings on DEQ's entire water quality regulatory package, including the dioxin standard, will be held between Jan. 14 and Jan. 22 (watch *OI Calendar* for details). For more information, contact Eugene Foster (DEQ) at 229-6982. References: ORS 468.735, OAR 340-41 Table 20 (proposed water quality standards for toxic substances).

AIR QUALITY

Advisory Committee to Recommend Few Changes to Protect Wilderness Area Visibility

Low Priority

After some 18 months of work, it appears a Department of Environmental Quality (DEQ) advisory committee will recommend few if any significant changes in the way the agency protects visibility and other "air quality related values" in wilderness areas. Even though the group will recommend adding some new wilderness areas to the program, it will be years before that occurs.

"This is a slow moving process - it's not on the front burner," said John Core, visibility program coordinator and liaison to the advisory committee.

The recommendations are being developed as part of a federally-mandated review of the state "Visibility Protection Program." The VPP is supposed to protect air quality related values such as scenic vistas, air chemistry, aquatic biology and even sensitive plants in certain designated wilderness areas.

Triennial Review Underway

First completed in 1986, the VPP was approved by the Environmental Protection Agency in 1987. The program is unique because it requires air pollution control measures even where air quality is generally very high. The idea is to "preserve, protect, and enhance" the pristine air quality often found in wilderness areas, national parks, national seashores and similar areas.

DEQ appointed a 15-member Visibility Protection Advisory Committee last April to help review the program. The group includes representatives of the public, federal land management agencies, timber and agricultural industries, environmentalists and the tourism industry.

Field & Slash Burning at Issue

The primary threat to air quality in these areas is smoke from grass seed industry field burning, forest industry slash burning, and natural forest fires. The VPP restricts field and slash burning during certain months so smoke does not interfere with recreational uses.

Twelve Areas Protected Now

Some of Oregon's most noteworthy attractions are among the 12 wilderness areas currently protected under the program. These include Crater Lake National Park, Mt. Hood Wilderness Area, and popular wilderness areas near Bend. Designated "Class I," these areas receive the greatest air quality protection under the Clean Air Act and DEQ regulations.

Two Questions

There are two general questions before the committee. First, should DEQ expand the VPP to include areas set aside as wilderness since 1977? Second, should DEQ change the way visibility and other related values are protected?

TWEAKING THE NUMBERS: A LOOK AT HOW THE STANDARD CHANGES

	Fish Consumpt (FCR)	Water Consumpt (WCR)	Body Weight (WT)	Accepted Risk (RISK)*	Bioconcentration (BCF)	Cancer Potency (CPF)*	Final Standard
DEQ's Standard	6.5 (g/day)	2 (l/day)	70 (kg)	1.00E-06	5,000	156,000 (mg/kg/day)	.013 PPQ
Tweaking the FCR	10	2	70	1.00E-06	5,000	156,000	.0089 PPQ
	25	2	70	1.00E-06	5,000	156,000	.0035 PPQ
	50	2	70	1.00E-06	5,000	156,000	.0017 PPQ
	75	2	70	1.00E-06	5,000	156,000	.0012 PPQ
	100	2	70	1.00E-06	5,000	156,000	.0009 PPQ
	150	2	70	1.00E-06	5,000	156,000	.0006 PPQ
Tweaking the BCF	6.5	2	70	1.00E-06	10,000	156,000	.0069 PPQ
	6.5	2	70	1.00E-06	25,000	156,000	.0034 PPQ
	6.5	2	70	1.00E-06	50,000	156,000	.0013 PPQ
	6.5	2	70	1.00E-06	75,000	156,000	.0009 PPQ
	6.5	2	70	1.00E-06	100,000	156,000	.0006 PPQ
	6.5	2	70	1.00E-06	150,000	156,000	.0004 PPQ
Tweaking the CPF	6.5	2	70	1.00E-06	5,000	6,700	.321 PPQ
	6.5	2	70	1.00E-06	5,000	9,700	.222 PPQ
	6.5	2	70	1.00E-06	5,000	17,500	.123 PPQ
	6.5	2	70	1.00E-06	5,000	36,000	.059 PPQ
	6.5	2	70	1.00E-06	5,000	250,000	.008 PPQ
NWPPA Numbers	13.4	2	70	1.00E-06	10,600	9,700	.050 PPQ
	13.4	2	70	1.00E-06	10,600	6,700	.073 PPQ
Bonine Numbers	100	2	50	1.00E-07	150,000	156,000	.0000021
DEQ's 'Lean To'	25	2	70	1.00E-06	50,000	15,000	.0037 PPQ

*NOTE: The RISK FACTOR is expressed in Lotus 1-2-3 scientific notation. A 1.00E-06 notation means a 1-in-a-million risk and 1.00E-07 means 1-in-10-million.

PULLING IT TOGETHER

How Does the Standard Change?

The large table on page 8 shows how the dioxin standard changes as the various parameters are "tweaked" one at a time. It also shows what happens if the controversial factors were all changed at the same time, rather than independently of each other. With the help of industry, the environmental community and DEQ, four new dioxin standards were developed -- two "NWPPA Numbers," the "Bonine Numbers" and the "DEQ Lean To."

Industry's Scenario

NWPPA Numbers. These numbers were provided by Doug Morrison, an attorney for the NW Pulp and Paper Association. If DEQ were to assume a fish consumption rate of 13.4 grams per day, a bio-concentration factor of 10,600 and a cancer potency factor of 6,700, the final dioxin standard would be .073 PPQ, about 5 times less strict than the current standard but still less than 1 PPQ. If the CPF were 9,700 -- the NWPPA's upper end estimate -- the final standard would be .050 PPQ.

Environmentalists' Scenario

Bonine Numbers. As an "exercise in number crunching," John Bonine agreed to provide his estimates for the factors: a fish consumption rate of 100 grams per day to protect Native Americans; a body weight of 50 kilograms -- about 110 pounds -- to better protect women and children; a risk factor of 1-in-10-million; and a bio-concentration factor of 50,000. Based on these assumptions, the dioxin standard would be 0.0000021 PPQ or 0.0021 parts per quintillion.

Bonine is actively engaged in the dioxin debate, representing the Northwest Coalition for Alternatives to Pesticides (NCAP) in litigation over DEQ's dioxin regulations.

DEQ's 'Lean To' Scenario

DEQ 'Lean To'. This scenario was developed with DEQ's help but does not reflect the agency's position on the dioxin standard. These numbers used are values the agency may "lean to" if the standard is eventually reviewed. The values are a fish consumption rate of 25 grams per day (about 1 fish meal per week), a bio-concentration factor of 50,000, and a cancer potency factor of 15,000 (over 10 times smaller than EPA's current CPF of 156,000, and smaller than any CPF employed by other federal agencies). Based on these assumptions, the final dioxin standard would be .0037 PPQ, or about 3½ times more strict than the current standard.

FOUR POSSIBLE STANDARDS

Source of Values	New Standard*
NWPPA Numbers	.050
NWPPA Numbers	.073
Bonine Numbers	.0000021
DEQ 'Lean To'	.0037

* This is how the standard would change if EPA used the unofficial values provided by industry, environmentalists and DEQ.

CONCLUSION

No Silver Bullets

All parties to the controversy acknowledge that the .013 PPQ dioxin standard is based on rough guesses and uncertain science.

Whether DEQ's dioxin standard is too strict, or not strict enough, depends on each individual's personal sense of comfort with levels of acceptable risk, and the economics of reaching the standard. As Dr. Donald Barnes, Director of the

standard is still less than 1 part per quadrillion.

EPA selected a CPF of 156,000 mg/kg/day. The higher the CPF, the more dangerous the chemical, and the lower the water quality standard.

The Kociba Study

The federal agency based its CPF on a single, two-year rat liver study completed in 1978 by Dr. R.J. Kociba. Since then, industry representatives and some members of the scientific community have challenged the Kociba study. Critics point out that the model used to develop the CPF is too simplistic. They argue Dr. Kociba improperly counted "precancerous liver tumors," failed to incorporate a "no observable affect level" in the test, and made other errors.

Under Attack

Dr. Robert Squire, a John Hopkins researcher and participant in the original study, recently reevaluated Dr. Kociba's data and concluded that the CPF was too high, possibly by a factor of 10 or more. EPA and DEQ acknowledge that legitimate questions surround the Kociba study but they are not prepared to change the CPF yet.

Other Agencies Use Lower CPFs

Other federal agencies use cancer potency factors much lower than EPA's. The U.S. Food and Drug Administration uses a CPF of 17,500 and the federal Center for Disease Control uses 36,000. According to Lydia Taylor, the administrator of DEQ's Water Quality Division, it would not be appropriate for DEQ to regulate dioxins based strictly on these cancer potency factors. "FDA is required to take economics into account when developing their cancer potency factor and we are not," she said.

Industry Wants State Review

The NWPPA has repeatedly urged DEQ to conduct its own review of dioxin's cancer potency. "The upshot is we believe they have over estimated the cancer potency of dioxin and that the states should do their own independent analysis of this factor," said Matthews.

The Washington Department of Health — with help from University of Washington researchers — has undertaken its own study of dioxin's cancer potency. EPA also has a study underway but Oregon does not.

DEQ May Respond

"We will be looking at the cancer potency factor when the new data is available from EPA, but for now we are satisfied with the value we are using," said DEQ's Foster.

CPF Range: 6,700 to 250,000

The range of CPF values seems to be between 6,700 and 250,000. The NWPPA says 6,700 to 9,700 is justified based on the Squire re-analysis and other studies. Environmentalists have challenged the objectivity of the Squire re-analysis and argue that there is no compelling reason to lower the CPF. They also assert that the CPF could be as high as 250,000.

DEQ Leans to 15,000

According to Foster, some studies suggest that the CPF could be as low as 15,000. If such a CPF were used, the dioxin standard would be about 0.12 PPQ, or about 10 times less strict than the current standard.

The table at right shows how the dioxin standard would change if lower CPF values were plugged into the formula. None of the new standards exceeds a single part per quadrillion.

HOW POTENT IS DIOXIN?	
CPF Values	New Standard*
6,700	0.321
9,700	0.222
17,500	0.123
36,000	0.059
250,000	0.008

* This is how the standard would change if DEQ used a lower CPF.

individuals may consume as much as 150 g/day, the overall average for the population would be lower.

BCF: Inadequate Science

Bio-concentration Factor (BCF). Dioxin in the environment tends to concentrate in living organisms, but in different ways and in different amounts. This factor quantifies the amount of dioxin fish concentrate in their tissues by swimming in contaminated water. Surprisingly, it does not take into account dioxin entering the fish through the food chain, just absorption through the skin.

Simplistic Studies

Based on simplistic laboratory experiments, EPA concluded that some fish concentrate 5,000 times as much dioxin in their tissues as is found in the water column. As with all other factors, DEQ adopted EPA's conclusion rather than conduct its own experiments.

Food Chain Ignored

Environmentalists argue a BCF of 5,000 grossly underestimates the amount of dioxin in fish tissue and therefore, the amount ingested by humans. "This is a significant oversight in the standard," said Bonine. "Scientists have documented dioxin accumulation in fish through the food change — called "bio-accumulation" — and it is a more important route of exposure than absorption through the skin," he said.

BCF Could Go Higher

Agency officials, industry representatives, and environmentalists generally agree that the BCF should be higher.

The debate is over how much higher. Studies conducted for the NW Pulp & Paper Association indicate the BCF for sturgeon ought to be 10,600, over twice as high as the number EPA plugged into the formula.

BCF for Non-Resident Fish at Issue

"We acknowledge that our effluent is responsible for elevated dioxin levels in local, resident fish populations near our discharge pipes," said Llewellyn Matthews, executive director of the NWPPA. "We are not convinced that pulp mill effluent contributes to dioxin levels found in non-resident fish such as salmon. There are other sources of dioxin," she said.

HOW MUCH DIOXIN DO FISH ACCUMULATE?

BCF Values	New Standard*
10,000	0.0069
25,000	0.0027
50,000	0.0013
75,000	0.0009
100,000	0.0006
150,000	0.0004

* This is how the standard would change if DEQ used a higher BCF.

BCF Range: 5,000 to 150,000

According to Bill Diamond, director of EPA's Water Quality Criteria and Standards Division, EPA studies suggest the bio-concentration factor could range as high as 159,000.

Environmentalists have even argued the BCF could be as high as 500,000 for some species, if contamination of the food chain is taken into account.

DEQ Leans to 50,000

DEQ seems to be leaning toward a moderate increase in the bio-concentration factor. "The conclusions on this factor are very crude at this point," said Foster. "My guess is it will settle in somewhere around 50,000 to 60,000." The table at right shows how the dioxin standard would change if a higher bio-concentration factors were used. According to Foster, DEQ is planning to conduct field studies to develop a more accurate BCF for Columbia River fish.

CPF: How Toxic is Dioxin?

Cancer Potency Factor. Most of the debate has focused on this factor, which indicates dioxin's human cancer-causing potential. All arguments by industry and the environmental community regarding dioxin's dangerousness are subsumed in this factor. A closer look at this factor reveals that even if the industry's lowest cancer potency number is plugged into the formula, the dioxin

THE "CONTROVERSIAL" NUMBERS

The remaining three factors — fish consumption (FCR), cancer potency (CPF), and bio-concentration (BCF) — have attracted the most debate for a couple of reasons. Not only do these factors have the greatest impact on the final standard, but the information on them is less developed. The bio-concentration and cancer potency numbers are based on laboratory studies that remain open to interpretation in the scientific community. Definitive surveys on consumption of Columbia River fish have not been done.

FCR: Who Does the Standard Protect?

Fish Consumption Rate (FCR). The debate over this factor is not complicated. Because different people eat different amounts and kinds of fish, a simple question arises: What single number best represents the public's average fish consumption? The answer may be, "There isn't one."

EPA's Number

In adopting the dioxin standard, DEQ accepted EPA's estimate that the average person consumes 6½ grams of freshwater or estuarine fish per day. That's a little less than one-quarter of an ounce per day, or about 5 pounds of fish and shellfish per year. According to Gene Foster, DEQ's expert on the dioxin standard, EPA based its estimate on a limited nationwide market survey of consumer buying habits.

Complete Data is Unavailable

"Complete fish consumption data has not been compiled specifically for the Columbia River system — where the pulp mills discharge their effluent — or for the fish most commonly consumed," said Foster. With the help of the Columbia River Intertribal Fish Commission, EPA is studying the diets of Native Americans along the river. Results could be available by year's end.

Accounting for Sub-Groups

Foster said differences between identifiable sub-groups cannot be overlooked when compiling fish consumption data. Native Americans — particularly those living along the river — Asians, commercial and recreational fisherman, and low-income subsistence fisherman all eat more fish than the general population.

FCR Range: 6.5 to 150 g/day

According to a preliminary risk assessment done by EPA this Summer, members of some sub-groups along the Columbia consume as much as 100 to 150 grams or about 3½ to 5¼ ounces of fish per day. "These rates are not off the wall," added Foster.

Industry says 13 - 16 g/day

Even the Northwest Pulp and Paper Association (NWPPA) — an industry trade group — acknowledges that EPA's 6.5 g/day figure is too low. The NWPPA estimates that recreational fisherman and Native Americans eat a little more than 13 and 16 grams of fish per day, respectively.

Most Agree 6.5 g/day is Low

The table at right shows how the dioxin standard would change if higher fish consumption numbers were plugged into the formula. No one claims that the average fish consumption rate in the Northwest is less than the 6.5 g/day. While

HOW MUCH FISH DO YOU EAT?

Grams Per Day	No. of 6 oz. Meals / Wk.	New Standard*
6.5	.2	0.013
10	.4	0.089
25	1.0	0.0035
50	2.0	0.0017
75	3.0	0.0012
100	4.0	0.0009
150	6.0	0.0006

* This is how the standard would change if DEQ used a higher FCR.

numbers to better fit their view of the relative risks and benefits of dioxin regulation.

Three of the six factors are generally accepted and attract little attention. These are the water consumption rate, body weight, and the acceptable risk (RISK) determination.

THE "ACCEPTED" NUMBERS

WCR - 2 liters/day

Water Consumption Rate (WCR). Because of how the formula works, this factor has virtually no affect on the final standard and consequently draws little attention. If DEQ were to eliminate drinking water as a route of dioxin exposure altogether — and plug in a "0" for the WCF — the final standard would not change.

WT - 70 kilograms

Body Weight Factor (WT). EPA used 70 kilograms for the body "weight" factor. At about 155 pounds, this seems to be a pretty good approximation of the average adult's weight. The dioxin standard would be stricter if the agency plugged in a smaller number for body weight. For example, had EPA used 50 kilograms — about 110 pounds — the final dioxin standard would be .009 PPQ instead of .013 PPQ.

All else being equal, people weighing less than 155 pounds, such as children and women would, on average, face a slightly greater risk of cancer than their heavier counterparts under the .013 PPQ standard.

RISK - 1-in-a-million

Acceptable Cancer Risk (RISK). There is no magic behind DEQ's decision to base the state's dioxin standard on a 1-in-a-million cancer risk. It is not mandated by federal or state law; it is a policy decision. According to Lydia Taylor, administrator of the Water Quality Division, all DEQ water quality standards have been based on this risk level since 1987.

1-in-10-million?

Reasonable people differ whether it would be appropriate to set environmental regulatory policy on a less demanding cancer risk limit. John Bonine, a professor of environmental law at the University of Oregon, questioned whether the general population should be subjected to any greater cancer risk for the sake of industry profits. "EPA has developed guidance for dioxin based on a 1-in-10-million cancer risk. Oregon is free to adopt it but hasn't," he said.

A standard based on a 1-in-10-million cancer risk would be ten times tougher than the current one, or .0013 PPQ.

1-in-10,000?

According to Doug Morrison, environmental counsel for the Northwest Pulp & Paper Association, using a 1-in-a-million cancer risk level can be overly protective. Morrison said it would be statistically sound to accept cancer risks as high as 1-in-100,000 or 1-in-10,000 for certain sub-populations — such as Native Americans, Asians and recreational fisherman who eat more river fish — because there are fewer than 1 million in the group. "You can allow a higher risk factor for these smaller groups and still not cause any additional cancers," he said.

Other States Vary

At least one other state has decided to accept greater risks. Maryland's dioxin standard is based on a 1-in-100,000 cancer risk and is 1.2 PPQ, about 100 times less stringent than Oregon's.

*DEQ Uses
1-in-a-million*

Because DEQ's Water Quality Division has uniformly set its standards based on a 1-in-a-million cancer risk, it seems unlikely that the state would follow Maryland's lead. The EQC has made it an agency-wide goal to apply a uniform risk level to all regulatory programs, but that level has not been defined, (see DEQ 1990 "Strategic Plan.")

An Understandable Formula

For all the rhetoric, battling experts, and discussions of "linearized multistage models," "LD₅₀ values" and all the rest, the standard is surprisingly understandable. The Environmental Protection Agency developed the dioxin standard using a relatively simple formula that includes six factors:

$$\text{Dioxin Standard} = \frac{\text{RISK} \times \text{WT}}{[\text{WCR} + (\text{BCF} \times \text{FCR}) \times \text{CPF}]}$$

The Six Factors

RISK: The cancer risk society is willing to tolerate from dioxin.

WT: The weight of the average adult.

WCR: The amount of water ingested by the average person each day -- called the water consumption rate.

BCF: The extent to which fish concentrate dioxin in their tissues by swimming in contaminated water -- called the bio-concentration factor.

FCR: The amount of fish ingested by the average person each day -- called the fish consumption rate.

CPF: The chemical's cancer potency, a measure of how harmful the toxin really is -- called the cancer potency factor.

The Overall Debate

Agency officials, industry representatives and environmentalists seem to agree that the formula itself is scientifically defensible. The debate rages over what numbers go into the formula and to many broader issues surrounding dioxin regulation.

EPA/DEQ Numbers

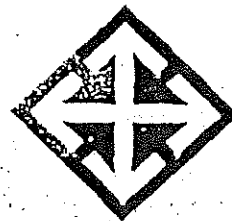
Through laboratory tests and simple assumptions, EPA assigned values to each of these factors, plugged them into a formula, and came up with the dioxin standard. DEQ adopted all of EPA's recommended values. With estimates of potential compliance costs running in the hundreds of millions of dollars and predictions of disastrous human health and environmental impacts, there is a surprisingly high degree of "play" in the numbers used to calculate the final standard. As a result, experts on both sides have been free to tweak the

RISK	1-in-a-million
WT	70 kilograms*
WCR	2 liters/day
BCF	5,000
FCR	6.5 grams/day*
CPF	156,000

* 6.5 grams per day is about 1/4 of an ounce of fish. 70 kgs is about 155 pounds.

OREGON INSIDER (ISSN 1043-7142) is published biweekly (twenty-four times a year) as a news service of the Oregon Environmental Foundation, 2637 SW Water Avenue, Portland, Oregon 97201 (503) 222-2252. The Foundation is a non-profit corporation dedicated to education and research. Executive Editor: Peter A. Ravella, OSB No. 86264, Staff Writers: Jeff Bernstein & Sarah McCoy, Business Manager: Greg Tozian, Advisory Board Members: Roy Hemmingway, Consultant; Margaret Kirkpatrick, Attorney; Stocl, Rives, Boley, Jones & Grey; Judy Roupf, Publisher, Resource Recycling magazine; Connie Taylor, Associate, Hart-Crowder; Dan Saltzman, President, Environmental Management Solutions and Diane Dimon Snow, Assistant to Earl Blumenauer. Subscription Rates: \$245 per year including first-class delivery, \$135 for private, non-profit 501(c)(3) organizations. Multiple subscription rates available. Letters to the Editor and comments welcome at above address. All rights reserved. Reproduction in any form forbidden without the express consent of the copyright owner. Copyright © 1990 by Oregon Environmental Foundation.

INSIDER



A BIWEEKLY DIGEST OF ENVIRONMENTAL NEWS

Inside the Dioxin Standard: Is it Defensible?

■ The Environmental Quality Commission (EQC) will decide Nov. 2 whether to hold public hearings on a complex proposal to update the state's water quality standards. The proposal covers an enormous number of topics including a new "anti-degradation standard" to protect pristine waterways, a new "wetlands" definition, and new standards for dissolved oxygen, bacteria, toxic pollutants, particulate matter and bacteria (see Issue 20).

Tucked somewhere in the middle of the package, the Department of Environmental Quality (DEQ) has proposed to keep unchanged the current and seemingly incomprehensible water quality standard for dioxin: 0.013 parts per quadrillion (ppq). In addition, the agency has for the first time proposed a standard limiting the amount of dioxin that can accumulate in fish tissue. Both proposals are sure to draw the attention of the pulp and paper industry and environmentalists.

Industry representatives have long questioned the scientific underpinnings of the dioxin standard. They have even challenged the assertion that dioxin poses any threat to human health or the environment, comparing it to broccoli in one study. On the other hand, environmentalists see a standard that leaves completely unregulated hundreds of closely related toxic organo-chlorine compounds that are discharged from bleach kraft pulp mills every day. Based only on protecting human populations from cancer, they also see a standard that ignores documented impacts on fish and wildlife and fails to address non-cancerous affects on human health such as reproductive interference and immune system suppression.

Each side contends that the standard for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) — the only compound regulated by DEQ's dioxin standard — should be changed in some way. For now, DEQ has decided to keep the standard as it is.

The standard "answers" a very narrow question for DEQ and the public: How much 2,3,7,8-TCDD can exist in the water column without creating more than a 1-in-a-million cancer risk?

The standard does not regulate the amount of dioxin in river bottom sediments, where a seemingly significant percentage of these insoluble compounds settle. It does not take into account the natural loss, or "attenuation," of dioxin through breakdown and binding with particles suspended in the water column. And, since compliance with the standard is measured down river at the edge of the "mixing zone," it isn't even used to directly regulate the amount of dioxin coming out of pulp mill discharge pipes.

There are significant gaps in the scientific understanding of this toxin and in the regulatory mechanism by which it is controlled. While it is impossible to resolve the many questions surrounding dioxin, it is not particularly difficult to understand the guts of the standard and how the federal government came up with the result of 0.013 parts per quadrillion.

CONTENTS

Inside the Dioxin Standard	1-9
Accepted Numbers	3
Controversial Numbers	4
Pulling it Together	7
Inclusion	7
Weakening the Numbers	8
Advisory Committee to Recommend Few Changes to Protect Wilderness Area Visibility	9
Governor Appoints Task Force to Explore Gold Mining Legislation — Mid-December Deadline Set	11
Ninth Circuit Throws Out Key Part of Toxic Water Pollution Control Program — Tougher Regulations Possible	11
Back Page Briefs	13
Calendar	14

EPA Moves to Reassess the Risk of Dioxin

Urged on by the scientific community, EPA is developing a new model for estimating dioxin's risk

GALVANIZED BY THE RESULTS OF A RECENT scientific meeting on dioxin's molecular actions, Environmental Protection Agency (EPA) administrator William K. Reilly has launched a major new effort to reassess the toxicity of this ubiquitous—and infamous—chemical.

Responding to criticism that the model EPA now uses to assess dioxin's risk is obsolete, Reilly has asked agency scientists to come up with a new "biologically based" model that will draw on an emerging understanding of the first steps that take place as dioxin enters a cell (for example, see pages 924 and 954). Reilly and others call the new effort "precedent-setting" not only for how the agency regulates carcinogens but also for EPA's quick response to new scientific developments—not its strong suit in the past.

Until now, EPA has gauged the risk of dioxin exposure by using the same model it applies to most carcinogens: the linear multistage model, which assumes that risk rises in proportion to dose. Agency officials have long viewed the model as a "default"—one adopted for lack of a real understanding of how carcinogens work—and their intent was always to replace it with something more realistic once mechanisms were understood. But so far, they say, such evidence has been lacking. Now it may at last be in hand, at least for dioxin and perhaps a handful of other chemicals that behave similarly.

The turning point came in an 8 March briefing for Reilly and his top deputies given by three agency scientists: William Farland and Peter Preuss, both at EPA headquarters in Washington, D.C., and Linda Birnbaum of EPA's Health Effects Research Laboratory in North Carolina. Part of the briefing was devoted to recent epidemiologic studies, including the new one by Marilyn Fingerhut of the National Institute for Occupational Safety and Health (NIOSH), which found perhaps the strongest link yet between high doses of dioxin and human cancer (see *Science*, 8 February, page 625). The EPA scientists also discussed a reanalysis of data from a 1976 study of cancer in dioxin-exposed rats that figured heavily in EPA's original risk assessment. After re-examining the original slides of liver tissue, investigators have concluded that the ani-

mals developed fewer tumors than was originally believed.

But it was Birnbaum and Farland's description of a meeting last November at the Banbury Center at Cold Spring Harbor Laboratory that Reilly says made the most compelling case for change. At that meeting a group of dioxin experts agreed that before dioxin can cause any of the ill effects it has been linked to—cancer, immune system suppression, chloracne, and birth defects—one "necessary but not sufficient" event must occur: the compound must bind to and activate a receptor, known as the aryl hydrocarbon or AH receptor (see *Science*, 8 February, p. 625). After that, the dioxin-receptor complex is transported to the nucleus, where it binds to specific sequences of

DNA and turns genes on and off, thereby causing its myriad effects. It had long been known that dioxin binds to a receptor, but before the Banbury meeting it had been unclear whether all of dioxin's effects or just some were mediated this way.

The Banbury group also agreed that dioxin has to occupy a certain number of AH receptors on a cell before any biological response can ensue. The result is a practical "threshold" for dioxin exposure, below which no toxic effects occur. That conclusion flies in the face of the linear model's underlying assumption: that the risk of harmful effects begins with exposure to a single molecule and increases from there. Faced with this new picture of dioxin's action, the Banbury participants urged EPA to develop a new, receptor-based model for dioxin risk assessment.

Reilly bit. He has now asked scientists in EPA's Office of Research and Development, in collaboration with academic researchers around the country, to come up with just such a model. The goal, explains Michael Gallo of the Robert Wood Johnson Medical School, one of the organizers of the Banbury

meeting who is now working with EPA, is to pinpoint the threshold or "safe" dose below which none of dioxin's ill effects should occur.

In building the model, Gallo and his EPA colleagues hope to draw on work on the dioxin receptor now under way in a number of labs around the country. In this issue of *Science*, for example, a group headed by Oliver Hankinson of the University of California at Los Angeles reports on the cloning of a protein that is necessary for the receptor to function. Various roles have been proposed for the new protein; one intriguing possibility is that it is part of the receptor itself. The dioxin receptor thus might contain

at least two proteins, one that binds to dioxin (and presumably whatever natural molecule dioxin mimics) and another that binds to DNA. "Boy, is that exciting," says Gallo, who adds that the new findings will feed directly into the model.

Until the model is complete, no one can say for sure whether it will show dioxin to be more or less risky than EPA now calculates, though Gallo and others speculate that it will turn out to be less risky. One of the major questions is how close the presumed "safe" dose is to the background levels of dioxin to which the general popula-



Key mover. Linda Birnbaum had been urging EPA to change how it does dioxin risk assessment.

tion is exposed. If background exposure is already near the "safe" dose, then there may not be much room for additional exposure.

Those background levels are largely unknown, so Reilly has added that question to the EPA scientists' assignment. Over the next year Birnbaum and other EPA scientists, in collaboration with researchers from NIOSH, the Centers for Disease Control, and the Air Force, hope to get a fix on blood levels of dioxin and the handful of polychlorinated biphenyls that behave similarly and thus could increase its risk. Meanwhile, other researchers will be studying the sources and routes of dioxin exposure—most of which are dietary—and how it is passed up the food chain.

Reilly wants the new model and related work complete within a year, at which time the results will go on to EPA's Scientific Advisory Board (SAB) for peer review. Three years ago, the SAB sent EPA scientists back to the drawing board when they tried to revise the dioxin standard, saying the science wasn't sound enough. Birnbaum and other EPA researchers predict a different outcome this time. ■ LESLIE ROBERTS

RECEIVED

JUN 07 1991

OFFICE OF THE DIRECTOR

NORTHWEST
PULP & PAPER

June 6, 1991

Fred Hansen, Director
Department of Environmental Quality
811 SW Sixth Avenue
Portland, OR 97204

Dear Mr. Hansen:

The Northwest Pulp and Paper Association is writing to support the James River Corp. and Boise Cascade petition to review Oregon's water quality standard for dioxin.

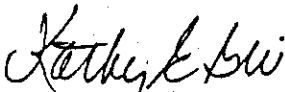
Oregon's current water quality standard of 0.013 parts per quadrillion (ppq) is a human-health-based standard. However, the science upon which this standard was developed has been challenged — and its conclusions radically altered — by the very scientist who conducted the original research. Therefore, the premise for the current standard is now highly questionable.

In addition, the Environmental Protection Agency has recently approved water quality standards 100-times less stringent than its guideline criterion (which Oregon adopted, along with a variety of other EPA recommendations for toxic discharges). Thus, EPA has indirectly conceded that, when taking new science and regional factors into consideration, its criterion of 0.013 ppq may be more restrictive than necessary to protect human health.

In recognizing this apparent conflict, EPA has announced a review of the science on dioxin. I have enclosed a May 17 report from *Science* that notes the one-year time frame EPA Administrator William Reilly has established for this review. However, should Oregon decide to wait on the EPA review before commencing a review of its standard — and not suspend its imposition of dioxin discharge restrictions — the two mills in question are bound by state law to invest millions of dollars in what may prove to be unnecessary environmental controls.

Oregon needs a scientifically-based water quality standard for dioxin that is fully protective of human health. The Clean Water Act delegates this responsibility to the states, in part so that states may incorporate regional data, such as fish consumption information, into their decision. It is time for Oregon to develop such a state-specific water quality standard for dioxin. We hope that the Environmental Quality Commission will accept the James River and Boise Cascade petition to review Oregon's water quality standard for dioxin.

Sincerely,



Kathy E. Gill, CAE
Public Affairs Director

enclosure
c: EQC members

Environmental Quality Commission
Directors Office
811 SW 6th Avenue
Portland, OR 97204

June 4, 1991

Dear Commission Member,

I urge you to please reject the latest proposal by the pulp industry to reduce the water quality standards in Oregon.

In a time of increased environmental awareness, it seems indefensible that certain companies would propose to lessen the standards for economic reasons, while neglecting and potentially harming a very large and complex ecological system.

My interest as a partner in land in Clatskanie prompts me to write this letter not only for myself, but for everyone who lives on or near the rivers in Oregon. You have the opportunity to effect a positive result for the people of Oregon. Please do so.

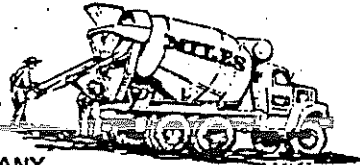
Respectfully,



Robert J. Thompson

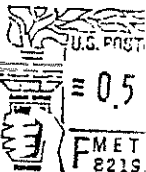
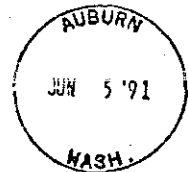
State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY
RECEIVED

MILES



SAND AND GRAVEL COMPANY

P.O. BOX 130, AUBURN, WASHINGTON 98071



Environmental Quality Commission
Directors Office
811 S.W. 6th Ave.
Portland, OR 97204



June 2, 1991

Environmental Quality Commission
Directors Office
811 S. W. 6th Ave.
Portland, Oregon 97204

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

RECEIVED

JUN 04 1991

OFFICE OF THE DIRECTOR

Dear Commission Member,

In reference to the giant pulp and paper manufacturers, notably James River Corporation and Boise Cascade, who brashly now request the Oregon E.Q.C. to set lower ambient water quality standards.

Needless to say, the Oregon standard is absolutely necessary to the maintenance of our waterways now and for the future. Certainly industrial needs must be given some consideration. However all members of the state's citizenry should also be granted the highest water quality standards in our great Northwest. Oregon as a leader in all environmental concerns is a model for the nation.

As owners of property on the Columbia River in Columbia County, we implore the E.Q.C. to reject the proposed change in water quality standards. Industry cannot provide any real evidence that would support any modification of the D.E.Q. standard.

Thank you for your vote against such a negative approach to our water quality.

Sincerely,

Roger and Mary Thompson

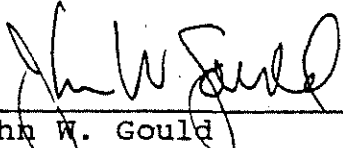
Roger and Mary Thompson
4144 S. E. Boardman Ave.
Milwaukie, Oregon 97267

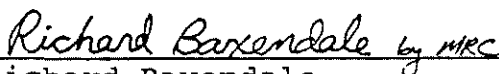
1 Oregon waters, no adverse effects would follow from the
2 adoption of this criterion. On the other hand, adoption of a
3 less stringent criterion for TCDD may substantially reduce
4 compliance costs for the pulp and paper industry, other
5 industries, municipal sewage treatment plants, and other
6 suspected sources of TCDD discharges. Adoption of a less
7 stringent TCDD criterion would also help maintain the
8 competitiveness of Oregon industries against industries in
9 other states that have already adopted TCDD water quality
10 criteria that are orders of magnitude less stringent than
11 Oregon's existing criterion of 0.013 ppq.

12
13 VIII. CONCLUSION

14 For the foregoing reasons, the Commission should
15 initiate rulemaking proceedings to adopt the amendments
16 proposed by the Petitioners. The amendments would establish a
17 water quality criterion for TCDD of 2.3 ppq in all waters of
18 the state.

19 DATED: May 23, 1991.

20
21 
22 _____
23 John W. Gould
24 Lane Powell Spears Lubersky
25 800 Pacific Building
26 520 S.W. Yamhill Street
Portland, Oregon 97204
(503) 226-6151

 by MRC

Richard Baxendale
506 National Building
1008 Western Avenue
Seattle, Washington 98104
(206) 623-2848

Of Attorneys for Petitioner
James River II, Inc.

Of Attorneys for Petitioner
Boise Cascade Corporation

1 Finally, Appendix A uses a realistic water consumption rate of
2 1.2 liters per day rather than EPA's assumed water consumption
3 rate of 2.0 liters per day. Id. Inserting these values into
4 the formula above yields a TCDD water quality criterion of 2.3
5 picograms per liter or 2.3 ppq. Id.

6 D. A TCDD Water Quality Criterion of 2.3 ppq for the
7 Protection of Human Health Also Protects Other Designated
8 Beneficial Uses

9 Section 3 of Appendix A discusses the reported
10 effects of TCDD on aquatic life. For long-term exposures to
11 fish, the lowest TCDD concentration for which adverse effects
12 have been reported is 38 ppq in a study of rainbow trout.
13 Appendix A, p. 3-6. No adverse effects for long-term exposure
14 have been reported at concentrations ranging from 1.1 ppq to
15 approximately 3000 ppq. Id. Recent experimental stream
16 studies have shown no adverse effects in cold-water fish
17 species at TCDD concentrations of 3.5 ppq. Id. Moreover,
18 evidence suggests that fish are more sensitive to TCDD than
19 other aquatic organisms. Appendix A, p. 3-7. For these
20 reasons, a TCDD water quality criterion of 2.3 ppq would
21 protect designated beneficial uses other than those involving
22 human health. See Appendix A, p. 9-3.

23 VII. EFFECTS OF ADOPTION OF THE PROPOSED AMENDMENTS

24 Because, as shown above and in more detail in
25 Appendix A, a TCDD water quality criterion of 2.3 ppq would
26 fully protect human health and designated beneficial uses of

1 c. Calculation of an Oregon TCDD Water Quality Criterion

2 Substituting only a regulatory bioaccumulation
3 multiplier (RBM) for the bioconcentration (BCF) used by EPA,
4 the formula for deriving an Oregon water quality criterion for
5 TCDD is as follows:

6
$$WQS = (ADI \times BW) / [(RBM \times FCR) + WCR]$$

7 where

8 WQS = water quality standard (criterion), expressed
9 in picograms per liter (pg/L), or ppq

10 ADI = acceptable daily intake, expressed in pg/kg/d

11 BW = body weight, expressed in kilograms (kg)

12 RBM = regulatory bioaccumulation multiplier

13 WCR = water consumption rate, expressed in liters
per day

14 FCR = fish consumption rate, expressed in kilograms
per day (kg/d).

15 Appendix A, p. 9-3.

16
17 As discussed above, a scientifically sound ADI for
18 TCDD is 1.0 to 10.0 pg/kg/d, not the 0.006 pg/kg/d used by EPA.
19 Appendix A uses the most conservative of the ADIs within this
20 range, 1.0 pg/kg/d. Id. Appendix A retains EPA's assumption
21 that average body weight is 70 kg, and uses an RBM of 5000,
22 which is equal to EPA's BCF of 5000. Id. Using fish
23 consumption data for the Columbia River and protecting
24 recreational anglers, the most exposed population group,
25 Appendix A uses a fish consumption rate of 0.0058 kg/d, rather
26 than EPA's assumed fish consumption rate of 0.0065 kg/d. Id.

1 estimate is 5.8 grams per day, and for Native Americans, the
2 mean consumption estimate is 16.4 grams per day. Appendix A,
3 pp. 5-7 to 5-8. Native Americans, however, consume a larger
4 proportion of anadromous fish than do recreational anglers.
5 Appendix A, p. 5-8. Reported TCDD concentrations of anadromous
6 fish, which spend little time within the river, are far below
7 those of resident fish species. Id. If this difference in
8 consumption patterns is taken into account, recreational
9 anglers are the most exposed population. Id. For this reason,
10 the most appropriate fish consumption rate to employ in setting
11 a TCDD water quality criterion for Oregon is 5.8 grams per day.
12 Appendix A, p. 5-9.

13 4. Consumption of Water

14 EPA's water quality criterion for TCDD is based on an
15 assumed daily consumption of water of 2.0 liters per day. This
16 consumption rate is derived from the daily ration of water
17 required by U.S. Army field personnel. Appendix A, p. 6-1.
18 Section 6 of Appendix A demonstrates that, although 2.0 liters
19 per day of liquids may be a reasonable consumption rate, only
20 approximately 60 percent of liquids consumed are water or
21 water-based soups or beverages. Thus, a more realistic water
22 consumption rate is 1.2 liters per day. Id.

1 portion of fish tissues through all accumulation methods. Id.
2 The advantage of the RBM is that increases in discharges of a
3 substance to a water body can be directly related to increases
4 in the concentration of that substance in edible fish tissues
5 in that water body. See Appendix A, p. 4-7.

6 A wide variation in BCFs and bioaccumulation factors
7 (BAFs) has been reported for TCDD. See id. When converted
8 into RBMs, however, the reported BCFs and BAFs fall within a
9 relatively narrow range of 600 to 6440 and average 3600. Id.
10 Therefore, the multiplier of 5000 used by EPA as a BCF is
11 scientifically sound as an RBM, albeit for different reasons.
12 Appendix A, p. 4-8.

13 3. Fish Consumption

14 The principal route by which humans are exposed to
15 TCDD discharged into water bodies is through the consumption of
16 fish that live in those water bodies. Appendix A, p. 5-1. The
17 study set forth in Appendix A chose the Columbia River as a
18 representative river to characterize Oregon fish consumption
19 patterns. In addition to characterizing the fish consumption
20 patterns of the general population, it also characterizes the
21 fish consumption patterns of two subpopulations likely to be
22 greater consumers of fish: recreational anglers and Native
23 Americans.

24 The mean consumption rate of Columbia River fish for
25 the general population is 0.91 grams per day. Appendix A,
26 p. 5-3. For recreational anglers, the median consumption

1 to calculate an ADI for TCDD. See Appendix A, pp. 2-12 to 2-
2 13. Most recently, this approach was used by a working group
3 of the World Health Organization to recommend an ADI for TCDD
4 of 10 pg/kg/d and by the Washington Department of Health to
5 develop an ADI for TCDD of 20 pg/kg/d. Appendix A, p. 2-13.

6 In sum, the weight of the most recent scientific
7 evidence supports an ADI for TCDD of between 1.0 and 10.0
8 pg/kg/d rather than EPA's now outdated ADI of 0.006 pg/kg/d.
9 As set forth in Appendices A and B, an ADI of 1.0 pg/kg/d is
10 fully protective of human health from all forms of TCDD-induced
11 toxicity, including cancer, reproductive effects, and
12 immunotoxicity.

13 2. Regulatory Bioaccumulation Multiplier (RBM)

14 EPA's TCDD criterion was calculated using a
15 bioconcentration factor (BCF) of 5000. A BCF, however, takes
16 into account only the uptake of dissolved compounds through
17 fish gill surfaces. Other means of accumulating substances in
18 fish tissues, such as ingestion of food and sediment, are not
19 addressed. Appendix A, pp. 4-1 to 4-2.

20 Section 4.3 of Appendix A describes the development
21 of a regulatory bioaccumulation multiplier (RBM). The RBM is
22 the concentration of a substance in the edible portion of fish
23 tissues divided by the total amount of the substance (dissolved
24 and adsorbed to particulates) added to the water body per unit
25 volume of water. Appendix A, p. 4-6. Thus, the RBM is the
26 degree to which a substance will be concentrated in the edible

1 Although the recent scientific information discussed
2 above and in Appendices A and B suggests that EPA's use of a
3 nonthreshold, linear model to estimate the risk of exposure to
4 TCDD is not scientifically valid, Dr. R. E. Keenan and others
5 have applied the results of the Kociba study, as reevaluated by
6 the PWG in 1990, to the model used by EPA. See Appendix A,
7 p. 2-12. Using this and other recent scientific information,
8 Dr. Keenan calculated a cancer potency for TCDD that was 16
9 times lower than that calculated by EPA. At an appropriately
10 conservative 10^{-5} risk level, Dr. Keenan's calculated cancer
11 potency for TCDD equals an ADI of 1.0 pg/kg/d, i.e., an ADI
12 approximately 167 times larger than EPA's ADI of 0.006 pg/kg/d.
13 See id. Dr. Squire, as set forth in Appendix B, also believes
14 that 1.0 pg/kg/d is an appropriate ADI for TCDD.

15 A model for calculating an ADI for TCDD that is more
16 consistent with the latest scientific knowledge, however, is
17 one that recognizes that TCDD acts through a threshold
18 mechanism. See Appendix A, p. 2-13; Appendix B, pp. 5-8. The
19 1978 Kociba rat study reported no observable adverse effects in
20 rats fed 1000 pg/kg/d of TCDD. Applying the widely accepted
21 safety factor of 100 to this "no observable adverse effect
22 level" (NOAEL) of 1000 pg/kg/d, one obtains an ADI of 10
23 pg/kg/d for TCDD. Id.

24 Many North American and European governments,
25 including those in Canada, the Netherlands, Germany, and the
26 United Kingdom, have used a threshold model and safety factors

1 which TCDD has no toxic effects. See id. The existence of
2 such a threshold is also supported by animal research and by
3 epidemiologic studies. The latter studies have not shown
4 evidence of increased cancer risk from low-level environmental
5 exposures to TCDD. See Appendix A, pp. 2-9.

6 In addition to the evidence for a TCDD toxicity
7 threshold, a recent reevaluation of the animal study on which
8 EPA relied in developing its ADI for TCDD shows that EPA's ADI
9 is scientifically unsound. A 1978 study by Dr. R. J. Kociba
10 and others showed that rats fed high doses of TCDD developed
11 liver lesions. Appendix A, p. 2-11; Appendix B, pp. 3-5. At
12 EPA's request, Dr. Robert Squire in 1980 evaluated these
13 lesions and reported that a number of the lesions were
14 cancerous tumors. Id. EPA used these results to classify TCDD
15 as a "probable" human carcinogen and to develop its ADI for
16 TCDD of 0.006 pg/kg/d. Id. Since that time, however, the
17 methodology for evaluating rat liver lesions has changed
18 considerably. Using this new methodology, which is the
19 methodology accepted by EPA, Dr. Squire and an independent
20 pathology working group (PWG) in 1990 reevaluated the results
21 of the 1978 Kociba study. See Appendix A, pp. 2-11 to 2-12;
22 Appendix B, pp. 3-5. Upon reevaluation, substantially fewer
23 cancerous tumors were found. Id. Moreover, the tumors were
24 associated with large TCDD doses that also induced extensive
25 liver damage. Id.

1 B. New Scientific Information and Region-Specific Exposure
2 Data

3 New scientific information concerning TCDD and
4 region-specific TCDD exposure information support the adoption
5 of a substantially less stringent TCDD criterion for Oregon.
6 This information and its use in the development of a TCDD
7 criterion for Oregon are described in detail in Appendices A
8 and B. The following is a summary.

9 1. Acceptable Daily Intake of TCDD

10 New scientific information concerning the mechanism
11 by which TCDD causes toxic effects, epidemiologic studies of
12 TCDD exposures, and the recent reevaluation of the animal
13 studies on which EPA relied in developing its guidance TCDD
14 criterion, demonstrate that EPA's ADI for TCDD is unwarrantedly
15 stringent by several orders of magnitude. Whereas EPA assumed
16 an ADI for TCDD of 0.006 pg/kg/d, this new scientific
17 information demonstrates that an ADI for TCDD of 1 to 10
18 pg/kg/d would fully protect human health, even under
19 conservative assumptions. See Appendix A, section 2; Appendix
20 B, pp. 8-9.

21 EPA's guidance TCDD criterion assumed that any
22 exposure to TCDD above zero produced a risk of cancer. Recent
23 scientific research, however, shows that the toxic effects
24 associated with exposure to TCDD are "receptor mediated." See
25 Appendix A, pp. 2-9 to 2-10; Appendix B, pp. 5-8. This, in
26 turn, indicates that there is a threshold dose of TCDD below

1 WCR = water consumption rate, expressed in liters
2 per day

3 FCR = fish consumption rate, expressed in kilograms
4 per day (kg/d).

5 Appendix A, p. iv.

6 The bioconcentration factor (BCF) is the
7 concentration of a substance in fish tissue divided by its
8 dissolved concentration in the water in which the fish lives.
9 See Appendix A, p. 4-1. It is a measure of the degree to which
10 a fish takes up a dissolved substance in the water and
11 concentrates the substance in its tissues. Thus, if a
12 dissolved substance is present in water at a concentration of
13 one part per million and is present in the tissues of fish that
14 live in the water at a concentration of 100 parts per million,
15 the BCF is 100.

16 Employing the formula set forth above, it may be seen
17 that the appropriate water quality criterion (the WQS) will
18 increase as either the ADI or body weight increases and that it
19 will decrease as either the BCF or fish or water consumption
20 increases. In deriving its TCDD water quality criterion of
21 0.013 ppq, EPA assumed an ADI of 0.006 pg/kg/d, an average body
22 weight of 70 kilograms, a BCF of 5000, average fish consumption
23 of 0.0065 kilograms per day, and average water consumption of
24 2.0 liters per day. Appendix A, p. iv.

1 ingestion of water. EPA's guidance criterion was based on
2 studies of tumors in rats that had been fed high doses of TCDD.
3 Appendix A, p. 2-11. EPA assumed that the incidence of tumors
4 in rats fed high doses of TCDD would be linearly related to the
5 incidence of tumors in humans exposed to low doses of TCDD and
6 that there was no threshold dose below which TCDD would not
7 pose some risk of cancer, i.e., any exposure to humans greater
8 than zero posed a risk of cancer. See Appendix A, p. 2-12.

9 Using these assumptions, the incidence of tumors in
10 rats fed high doses of TCDD, and a "risk level" of 1 in
11 1,000,000 (1×10^{-6}), EPA derived an acceptable daily intake
12 (ADI) for TCDD of 0.006 picograms per kilogram of body weight
13 per day (pg/kg/d). That is, EPA's water quality criterion for
14 TCDD is based on the assumption that humans can with reasonable
15 risk consume up to 0.006 pg/kg/d of TCDD. See Appendix A,
16 p. iv.

17 To derive a guidance water quality criterion for TCDD
18 from an ADI of 0.006 pg/kg/d, EPA used the following simple
19 formula:

$$20 \quad WQS = (ADI \times BW) / [(BCF \times FCR) + WCR]$$

21 where

22 WQS = water quality standard (criterion), expressed
23 in picograms per liter (pg/L), or ppq

24 ADI = acceptable daily intake, expressed in pg/kg/d

25 BW = body weight, expressed in kilograms (kg)

26 BCF = bioconcentration factor

1 criteria, including those for TCDD, are published in the EPA
2 document Quality Criteria for Water 1986, EPA 440/5-86-001.

3 EPA's water quality criteria are intended only as
4 guidance for other federal agencies and the states; the states
5 are not required to adopt EPA's criteria as their own. The
6 preamble to Quality Criteria for Water 1986 emphasizes:

7 These criteria are not rules and they
8 do not have regulatory impact. Rather,
9 these criteria present scientific data and
10 guidance of the environmental effects of
11 pollutants which can be useful to derive
12 regulatory requirements based on
13 considerations of water quality impacts.

14 So long as a state's water quality criteria are derived through
15 "scientifically defensible methods," EPA will approve the
16 criteria although the criteria may differ from EPA's guidance
17 criteria. See 40 C.F.R. § 131.11(b)(1) (1990). Indeed, EPA
18 recently approved Maryland's (1990) and Virginia's (1991) TCDD
19 water quality criteria of 1.2 ppq, which are nearly 100 times
20 greater than EPA's guidance criterion of 0.013 ppq.³

21 VI. REASONS FOR THE RULE AMENDMENT

22 A. Basis for the Present TCDD Criterion of 0.013 ppq

23 Oregon's present TCDD criterion of 0.013 ppq was
24 adopted directly from EPA's guidance criterion for the
25 protection of human health from the consumption of fish and the

26 ³ EPA's approval of Maryland's TCDD water quality
27 criterion is attached as Appendix C; EPA's approval of
28 Virginia's water quality criterion is attached as Appendix D.

1 organic and inorganic pollutants
2 established by EPA and published in Quality
3 Criteria for Water (1986). A list of the
4 criteria is presented in Table 20.

5 V. LEGAL BACKGROUND

6 The Commission's function is "to establish the
7 policies for the operation of the department [DEQ]." ORS
8 468.015. In particular, the Commission is to "establish
9 standards of quality and purity for the waters of the state."
10 ORS 468.735(1).

11 The federal Clean Water Act also requires the
12 Commission, as the state agency responsible for water pollution
13 control, to adopt water quality standards for the waters of the
14 state. See 33 U.S.C. § 1313(c)(1). Water quality "standards"
15 "consist of the designated uses of the . . . waters involved
16 and the water quality criteria for such waters based upon such
17 uses." 33 U.S.C. § 1313(c)(2)(A). For substances such as TCDD
18 that are listed as toxic pollutants under the Clean Water Act,
19 states must adopt "specific numerical criteria" for the
20 pollutants. See 33 U.S.C. § 1313(c)(2)(B). All water quality
21 criteria adopted by a state are subject to review by EPA for
22 consistency with the Clean Water Act. See 33 U.S.C.
23 § 1313(c)(3).

24 Section 304 of the Clean Water Act requires EPA to
25 "develop and publish . . . criteria for water quality."
26 33 U.S.C. § 1314(a)(1). The most recent collection of these

1 established by EPA and published in Quality
2 Criteria for Water (1986). A list of the
criteria is presented in Table 20.

3 Table 20 lists these EPA criteria for TCDD: 0.010 micrograms
4 per liter (ug/l) (10,000 ppq) for the acute protection of
5 freshwater aquatic life; 0.00001 ug/l (10 ppq) for the chronic
6 protection of freshwater aquatic life; 0.000014 nanograms per
7 liter (ng/l) (0.014 ppq) for the protection of human health
8 from fish consumption; 0.000013 ng/l (0.013 ppq) for the
9 protection of human health from fish consumption and water
10 ingestion. The most stringent EPA TCDD criterion, then, is
11 0.013 ppq.

12 Petitioners request that the Commission amend
13 subparagraph (2)(p)(B) of each of the sections of OAR chapter
14 340, division 41, listed above to read as follows (matter to be
15 added is highlighted):

16 Levels of 2,3,7,8-tetrachlorodibenzo-
17 p-dioxin shall not exceed 0.0023 nanograms
per liter (2.3 parts per quadrillion).
18 Levels of other toxic substances shall not
19 exceed the most recent criteria values for
organic and inorganic pollutants
20 established by EPA and published in Quality
Criteria for Water (1986). A list of the
criteria is presented in Table 20.

21 Thus, following the requested amendment, subparagraph (2)(p)(B)
22 of each of the amended sections of OAR chapter 340, division
23 41, would read:

24 Levels of 2,3,7,8-tetrachlorodibenzo-
25 p-dioxin shall not exceed 0.0023 nanograms
per liter (2.3 parts per quadrillion).
26 Levels of other toxic substances shall not
exceed the most recent criteria values for

1 City of St. Helens

2 Represented by: Peter M. Linden
3 City Attorney
4 City of St. Helens
P.O. Box 278
St. Helens, Oregon 97051

5 Northwest Coalition for Alternatives to Pesticides
6 Columbia River United

7 Represented by: John E. Bonine
8 Western Environmental Law Clinic
9 School of Law
University of Oregon
Eugene, Oregon 97403

10 Pope and Talbot, Inc.

11 Represented by: Jay T. Waldron
12 David F. Bartz, Jr.
13 Schwabe, Williamson & Wyatt
1600-1950 Pacwest Center
1211 S.W. Fifth Avenue
Portland, Oregon 97204

14 UA Local 290, Plumbers and Steamfitters
15 Mike Jerkiewicz

16 Represented by: Linda K. Williams
17 1744 N.E. Clackamas Street
Portland, Oregon 97232

18 IV. RULE TO BE AMENDED

19 The Petitioners request that the Commission amend
20 subparagraph (2)(p)(B) in each of the following sections of
21 Oregon Administrative Rules chapter 340, division 41: 205, 245,
22 285, 325, 365, 445, 485, 525, 565, 605, 645, 685, 725, 765,
23 805, 845, 885, 925, and 965. Subparagraph (2)(p)(B) of each of
24 these sections is identical:

25 Levels of toxic substances shall not
26 exceed the most recent criteria values for
organic and inorganic pollutants

1 discharges from the mill into its treatment works. The City
2 subsequently requested a contested case hearing on the TCDD
3 effluent limits and other conditions of its renewed permit.
4 Boise Cascade is a party to that contested case. The contested
5 case has been consolidated with the contested case concerning
6 James River's renewed NPDES permit and is now pending before
7 the Commission. Boise Cascade's address is:

8 Boise Cascade Corporation
9 1600 S.W. Fourth Avenue
 Portland, Oregon 97201

10 All correspondence concerning this petition should be
11 directed to

12 John W. Gould
13 Lane Powell Spears Lubersky
14 800 Pacific Building
 520 S.W. Yamhill Street
 Portland, Oregon 97204

15 and

16 Richard Baxendale
17 506 National Building
18 1008 Western Avenue
 Seattle, Washington 98104

19 III. OTHER INTERESTED PARTIES

20 The Petitioners believe that the other parties to the
21 contested cases described above may be interested in the
22 petition. In addition to DEQ, those parties and their
23 attorneys are:

1 ~~request an opportunity to make an oral presentation of the~~
2 ~~petitioner to grant the Petition~~

3
4 II. PETITIONERS

5 Petitioner James River owns and operates a bleached
6 kraft pulp and paper mill at Wauna, Oregon. The mill
7 discharges process wastewater into the Columbia River pursuant
8 to a National Pollutant Discharge Elimination System (NPDES)
9 permit issued by the Oregon Department of Environmental Quality
10 (DEQ). On November 14, 1990, DEQ issued a renewed NPDES permit
11 for the mill which contained effluent limits for TCDD. James
12 River subsequently requested a contested case hearing on the
13 TCDD effluent limits and other conditions of the renewed
14 permit. The contested case is now pending before the
15 Commission. James River's address is:

16 James River II, Inc.
17 Wauna Mill
18 Route 2, Box 2185
Clatskanie, Oregon 97016

19 Boise Cascade owns and operates a bleached kraft pulp
20 and paper mill at St. Helens, Oregon. The mill discharges
21 process wastewater into a publicly owned treatment works
22 operated by the City of St. Helens. The treatment works
23 discharges effluent into the Columbia River pursuant to an
24 NPDES permit issued by DEQ. On November 14, 1990, DEQ issued a
25 renewed NPDES permit for the City which contained effluent
26 limits for TCDD and which required the City to limit TCDD

1 A substantial body of new scientific evidence
2 concerning the toxicity of TCDD has become available since EPA
3 published its guideline TCDD criteria in 1984.² This new
4 evidence overwhelmingly shows that TCDD is far less harmful
5 than was originally assumed and that EPA's TCDD criterion of
6 0.013 ppq for the protection of human health is no longer
7 scientifically defensible. The new evidence, together with
8 evidence concerning TCDD that is specific to Oregon, is
9 discussed in the "Supporting Document for the Establishment of
10 an Ambient Water Quality Criterion for 2,3,7,8-
11 Tetrachlorodibenzo-p-Dioxin in the State of Oregon," attached
12 as Appendix A, and in "An Assessment of Potential Carcinogenic
13 Risk from 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)," attached
14 as Appendix B. In accordance with the recommendations set
15 forth in Appendix A, the Petitioners request that the
16 Commission initiate rulemaking proceedings to amend
17 subparagraph (2)(p)(B) of the sections listed above to provide
18 that concentrations of TCDD shall not exceed 2.3 ppq in Oregon
19 waters.

20 The Petitioners submit this Petition for Rule
21 Amendment pursuant to ORS 183.390, OAR 340-11-046, and OAR 137-
22 01-070. As provided in OAR 137-01-070(3)(b), the Petitioners
23
24

25
26 ² EPA's Quality Criteria for Water 1986, EPA 440/5-86-
001, was published in 1986, but EPA's criteria for TCDD were
published in 1984, 49 Fed. Reg. 5831 (Feb. 15, 1984).

1
2 I. INTRODUCTION

3 James River II, Inc. (James River) and Boise Cascade
4 Corporation (Boise Cascade) petition the Commission to amend
5 subparagraph (2)(p)(B) of OAR chapter 340, division 41,
6 sections 205, 245, 285, 325, 365, 445, 485, 525, 565, 605, 645,
7 685, 725, 765, 805, 845, 885, 925, and 965. Supporting the
8 Petition are the Associated Oregon Industries, the Northwest
9 Pulp & Paper Association¹, the City of St. Helens, the
10 Association of Western Pulp and Paper Workers, Local 1, and the
11 United Paper Workers International Union, Local 1097.

12 The sections of the Oregon Administrative Rules
13 listed above establish water quality criteria for all of
14 Oregon's water basins. Subparagraph (2)(p)(B) of each section
15 is identical:

16 Levels of toxic substances shall not
17 exceed the most recent criteria values for
18 organic and inorganic pollutants
19 established by EPA [the U.S. Environmental
20 Protection Agency] and published in Quality
21 Criteria for Water (1986). A list of the
22 criteria is presented in Table 20.

23 The most stringent of EPA's published criteria for 2,3,7,8-
24 tetrachlorodibenzo-p-dioxin (TCDD), as set forth in Table 20,
25 is 0.000013 nanograms per liter, or 0.013 parts per quadrillion
26 (ppq), for the protection of human health.

26 ¹ Pope & Talbot, Inc., is a member of the Northwest Pulp
& Paper Association but takes no position on the Petition.

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION
OF THE STATE OF OREGON

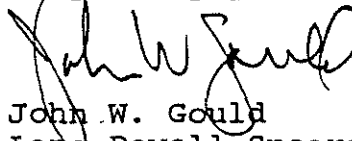
In the matter of the petition of)
James River II, Inc., and Boise)
Cascade Corporation to amend) PETITION FOR RULE AMENDMENT
subparagraph (2)(p)(B) of Oregon)
Administrative Rules chapter)
340, division 41, sections 205,) (ORAL PRESENTATION
245, 285, 325, 365, 445, 485,) REQUESTED)
525, 565, 605, 645, 685, 725,)
765, 805, 845, 885, 925, and)
965.)

May 23, 1991

Mr. Fred Hansen
May 23, 1991
Page 3

will fully protect human health and all designated beneficial
uses of the waters of the state.

Very truly yours,



John W. Gould
Lane Powell Spears Lubersky
800 Pacific Building
520 S.W. Yamhill Street
Portland, Oregon 97204
(503) 226-6151
Of Attorneys for
Petitioner James River II, Inc.

Richard Baxendale by MRC
Richard Baxendale
506 National Building
1008 Western Avenue
Seattle, Washington 98104
(206) 623-2848
Of Attorneys for
Petitioner Boise Cascade
Corporation

cc: Chair William P. Hutchison, Jr.
Commissioner Emery N. Castle
Commissioner Henry Lorenzen
Commissioner Carol A. Whipple
Commissioner William W. Wessinger
Mr. John E. Bonine
Mr. Larry Edelman
Mr. Michael Huston
Mr. Peter Linden
Ms. Lydia Taylor
Ms. Linda K. Williams
Mr. Jay T. Waldron
Mr. James M. Whitty, Associated Oregon Industries
Ms. Llewellyn Matthews, Northwest Pulp & Paper Association
Mr. William Taylor, United Paper Workers International
Union, Local 1097
Mr. Gordon Simpson, Association of Western Pulp and Paper
Workers, Local 1

Mr. Fred Hansen
May 23, 1991
Page 2

In submitting this petition, the petitioners are mindful of the Department's triennial review recommendation to retain the existing water quality criterion of 0.013 ppq. It is the petitioners' understanding, however, that the Department's recommendation was made without the benefit of the very recent scientific information that prompted EPA Administrator Reilly's April decision to reevaluate the risks posed by TCDD. This information includes the reassessment of the animal studies on which EPA relied in developing its guidance criterion for TCDD, the results of the Banbury Conference on TCDD risks, and recently published epidemiologic studies of workers and others exposed to TCDD.

The petitioners are also mindful of the limited resources of the Commission and the Department and their extensive obligations with respect to other matters. Given these constraints, the Commission may be tempted not to take any action until EPA has undertaken the lengthy process of revising its guidance criterion for TCDD. Unfortunately, by the time that EPA has acted, Oregon's existing TCDD criterion may have resulted in tens of millions of dollars of additional pollution control expenditures that the latest scientific information shows will produce no environmental benefit. Maryland and Virginia have recently averted this wasteful result by adopting, with EPA approval, water quality criteria for TCDD that are nearly 100 times less stringent than EPA's now outdated 1984 guidance criterion.

By granting the petition, the Commission will not, of course, have committed itself to revising the TCDD criterion. The petitioners ask only for an opportunity to present the latest scientific evidence on TCDD to the Commission and the public in the open forum provided by the Commission's procedures for rulemaking. In presenting this evidence, the petitioners would make available to the Commission, as well as the public, national experts in the risks posed by TCDD, including Dr. Robert Squire, whose evaluation of the tissues of rats fed TCDD was the primary basis for EPA's present guidance criterion. The petitioners are confident that this evidence will convincingly demonstrate that a TCDD criterion of 2.3 ppq

R E C E I V E D

MAY 23 1991

May 23, 1991

OFFICE OF THE DIRECTOR

HAND DELIVERED

Mr. Fred Hansen, Director
Oregon Department of Environmental Quality
811 S.W. Sixth Avenue
Portland, Oregon 97204

Re: Petition for Rule Amendment

Dear Mr. Hansen:

Enclosed is a petition to amend Oregon's ambient water quality criterion for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). The petitioners are James River II, Inc., and Boise Cascade Corporation. Also supporting the petition are the Associated Oregon Industries, the Northwest Pulp & Paper Association¹, the City of St. Helens, the Association of Western Pulp and Paper Workers, Local 1, and the United Paper Workers International Union, Local 1097.

As you know, Oregon's present ambient water quality criterion for TCDD is 0.013 parts per quadrillion (ppq). The Environmental Quality Commission adopted this criterion in 1987 from an EPA guidance criterion developed in 1984. Since the criterion's adoption, and particularly within the last several months, a substantial body of new scientific evidence has shown that the assumptions upon which EPA relied in developing its guidance criterion were incorrect and that EPA's guidance criterion enormously overstated the risks posed by TCDD. The new evidence prompted EPA Administrator William Reilly in April of this year to order a complete reevaluation of the risks posed by TCDD and of EPA's TCDD-related programs.

The supporting documents appended to the petition describe in detail the latest scientific information concerning the risks posed by TCDD, as well as information concerning environmental exposures to TCDD in Oregon. Based on this information, the petition proposes an Oregon water quality criterion for TCDD of 2.3 ppq.

¹ Pope & Talbot, Inc., is a member of the Northwest Pulp & Paper Association but takes no position on the petition.



OREGON SALMON COMMISSION

Date: December 15, 1989

To: Fred Hansen, Director
Department of Environmental Quality
811 SW Sixth
Portland, OR 97204

From: Tom Robinson, Manager
Oregon Salmon Commission

Re: Proposed Rule Changes

We understand that Oregon's EQC is reviewing proposed rule changes on pulp mill pollution effluents January 1990. As you know we continue to provide comment on this matter as we find it to have significant impact on our industry through degradation of the environment. The details of our concern are outlined in previous communications and testimony submitted to you.

We also have some specific concerns and comments regarding proposed rule changes.

1. We ask for a return to full, open disclosure of all proceedings between the state and pulp mill industry representatives as this matter is resolved.
2. We support the status-quo of rules which require formal findings on pollution before EQC makes approvals. We recommend that food fish studies should be independently performed by other than industry contractors, to assure the objectivity of required findings.
3. We call your attention to the following items from the proposed rule changes:
 - a) Proposed changes in paragraph 3, section (a) are alarming in that they appear to weaken existing permit processes, allowing too much subjective opinion, changing the phrase "would not", to read, "is not expected to", is clearly a move away from the level of control and protection which we must have through your commission, to assure safe, quality habitat for food fish in Oregon.
 - b) Likewise, we support the status-quo for procedures which determine WQL status. There must not be a relaxing of processes which would remove the burden of positive proof of compliance with effluent standards, prior to removing a waterway, or a facility, from corrective activity. Speculative statements that compliance is expected may be encouraging news, but should not be substituted for actual achievement.

Thank you for your attention to our requests. We continue to rely on EQC, and DEQ to protect the habitat of Oregon's salmon resource as you execute your difficult tasks.

cc See attached sheet



OREGON SALMON COMMISSION

Date: May 1, 1990

To: DEQ
Water Quality Division
811 SW 6th Ave.
Portland, OR 97204

From: Tom Robinson, Manager
Oregon Salmon Commission

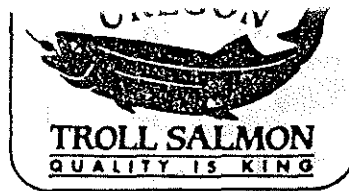
RE: Proposed Rule Changes Affecting Pulp Mill/Dioxin Effluents Standards.

Please be advised that the Oregon Salmon Commission on behalf of Oregon's commercial salmon trollers and on behalf of the consuming public which we serve under OAR 576.305 does not support any of the options for rule changes affecting standards applied to pulp mill effluents/dioxin contamination. The Oregon Salmon Commission has provided formal oral and written testimony to DEQ and to the Environment Quality Commission on this subject. Our position remains unchanged. We adamantly support stringent standards which will fully protect both food quality and the smolt survivability of salmon which use the Columbia River corridor. While we are satisfied that no danger to consumers of salmon food fish is imminent, we see this as no reason to relax any of the standards. We continue to be greatly concerned about mortality of juvenile salmon and about biological effects on adult salmon's immune systems and reproductive capacities when exposed to these effluents. Those biological and mortality concerns have not yet been addressed nor answered satisfactorily.

Attached are copies of written testimony already supplied to you by this Commission. Please apply them to this record.

On behalf of the Commission I also express a great dissatisfaction with the notification processes being used as this issue continues to run a gauntlet of meetings and reviews. I have not been formally contacted on a regular basis by your department about the schedule of hearings and comment deadlines. I remind you that we are a state agency which is very much affected by the decisions you will make. I find it extremely remarkable that my best source of up-to-date information continues to be the "grapevine" rather than official communications from your department. Furthermore, I know that the Pacific Fisheries Management Council and the states of Oregon and Washington fisheries divisions are greatly concerned about this issue. Are they not being directly contacted? Please take prompt action to correct this oversight in notification.

cc: William P. Hutchinson EQC
Randy Fisher ODFW
Joe Blum WDF
Richard Schwarz PFMC
Frank Warrens PFMC
Bob Eaton Salmon for All



May 10, 1990

OREGON SALMON COMMISSION

Llewellyn Matthews
Northwest Pulp & Paper Association
1300. 114th Ave. SE, Suite 110
Bellevue, WA 98004

Dear Mr. Matthews:

Thank you for your letter and overview statement pertaining to the dioxin issue. Although I was not personally in attendance, this Commission was represented at your Astoria briefing by Commissioner Robert Finzer. Mr. Finzer is a North Coast commercial fisherman and wholesaler. He gave a brief report on the situation at our last Commission meeting.

We are sensitive to your problems and we support your stated commitment to a solution which can allow a healthy pulp industry within a healthy environment. To us that continues to mean operations which do not pose risk to salmon food products nor to salmon survival, health or reproduction. It also means maintaining standards of water quality which are equal to those of our competitors in other nations which provide salmon to the world market.

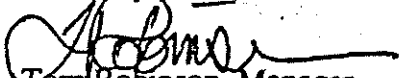
So far, we are fairly comfortable with the food safety issue. Our public salmon are pure, clean food with all agencies finding salmon as the least likely of all fishes to be contaminated with toxins.

However, we remain steadfast in our position that standards equivalent to those in Europe and Canada be maintained here. Also, we continue to insist that our standards be met in fact. These are critical market demands.

We continue to be extremely concerned about salmon reproduction, smolt mortality, and immune systems, when exposed to effluent materials throughout the inland waterways they use. Even small percentages of mortality or fecundity loss represent large numbers of salmon losses at the harvest end. For example a 1% loss of down stream coho smolts represents a number of salmon roughly equal to the entire Oregon commercial troll harvest. We must learn the true impact on smolts and learn how to control it. I have not read the reports you cite as showing "no adverse affects on fish reproduction or fish tissue." Perhaps your staff can supply us with a copy.

Your offer to meet with us may be something we can explore later this fall, after our harvest season. We, like you, are an industry which supplies a valuable commodity to the market, relying on a healthy natural resource for the raw material. In the past, salmon resources industries have not viewed the wood products industry as a friend. I think you will agree that there is basis in fact for that view. Too much of our salmon resource has been lost to forest industries already. If that stops, perhaps we can ally as fellow industries, in common cause. If it does not, then our position is clear, and probably adversarial.

Sincerely yours,


Tom Robinson, Manager
Oregon Salmon Commission

cc: Dalton Hobbs, Department of Agriculture
Jill Zarnowitz, OR Dept. of Fish & Wildlife
Bob Eaton, Salmon for All
Oregon Salmon Commissioners

313 S.W. 2nd Street, Suite D
P.O. Box 1033
Newport, Oregon 97365



(503) 265-2437

OREGON SALMON COMMISSION

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

RECEIVED
JUN 07 1991

June 6, 1991

Office of the Director
Department of Environmental Quality
811 SW 6th Ave.
Portland, OR 97204

OFFICE OF THE DIRECTOR

RE: Petition for reduction of Oregon's ambient water quality standard

Dear Mr. Fred Hansen:

At a very late date I was advised that this petition is once again before your department. I understand the EQC will consider and possibly act upon the petition submitted to you by James River Corporation and Boise Cascade at its June 14th meeting. For some reason this Commission has been excluded from any official notification by your department or by the petitioners. Instead I have been advised by a local citizen that this action has been about to take place.


This Commission remains opposed to lowering of our ambient water quality standards until and unless it can be shown that there will be zero negative effect upon the health of salmon runs in the affected waters. The basis of our concern is primarily for effects on the juvenile salmon who must use the fresh water habitat enroute to the ocean. We remain especially concerned in view of the recent petitions for endangered species status on several northwest salmon runs.

I include copies of testimony and correspondence already submitted to your department which I would like to have attached to the record for this particular petition.

In short, the Commission remains extremely concerned that even current loading of dioxins into the fresh water habitat may have deleterious effects on juvenile salmon survivability. Until it can be shown that those effects do not exist and until it can be shown that a reduction of our water quality standards will not further the problem, we remain opposed to any lessening of the standards.

Thank you for your considerations. I hope the oversight which led to the lack of communication with this Commission about these petitions will be corrected.

Sincerely yours,


Tom Robinson, Manager
Oregon Salmon Commission

TR/nf

- The "Forest through the trees" is that the environmental loadings of dioxin from the mills may result in high levels of risk to humans.

- The analysis of the regulatory options suggests that this particular industrial source category fits the mold for a regulatory pollution prevention initiative through use of the CWA, TSCA, and RCRA.

- * could require substantial reduction in the overall use of chlorine
- * BACT seems to be oxygen delignification

30,000.

Max. Daily Dose = 51.43 pg dioxin/kg/day.

MIR = 8.6×10^{-3}

Avg. Daily Dose = 9.28 pg dioxin/kg/day

Avg. lifetime risk = 1.5×10^{-3}

Annual Cancer Incidence = $(1.5 \times 10^{-3} * 30,000) / 70$ yr lifespan
= 0.67

3. Low income families.

Assumptions:

- a. MEI consumes 100 gms fish/day.
- b. Average consumption is 69gms fish/day.
- c. 70 kilogram person.
- d. Lifetime exposure.
- e. Max. dioxin concentration in fish fillet = 24 pg/gm.
- f. Weighted average dioxin in fish fillet = 6.5 pg/gm.
- g. Population of 610,000.
- h. Risk Specific Dose of Dioxin = lifetime cancer risk of one in a million is:
0.006 pg/kg/day.

Max Daily Dose = $(100 \text{ gms/day}) \times (24 \text{ pg dioxin/gm}) / 70 \text{ kg person}$
= 34.28 pg dioxin/kg/day

MIR = $\{(34.28 \text{ pg/kg/dy}) / (0.006 \text{ pg/kg/dy})\} \times 10^{-6}$
= 5.7×10^{-3}

Avg. Daily Dose = $(69 \text{ gms/day}) \times (6.5 \text{ pg/gm}) / 70 \text{ kg person}$
= 6.41 pg dioxin/kg/day

Avg. lifetime risk = $\{(6.41 \text{ pg/kg/dy}) / (0.006 \text{ pg/kg/dy})\} \times 10^{-6}$
= 1.0×10^{-3}

Annual Cancer Incidence = $\{(1.0 \times 10^{-3}) * (610,000)\} / 70$ year lifespan
= 9.3

The Bottom Line:

defined exposed population. This was computed using average lifetime risk.

1/ U.S. Environmental Protection Agency (1988). Risk Assessment for Dioxin Contamination Midland, Michigan. Region 5. EPA-905/4-88-005.

2/ Estimated consumption by the U.S. Food and Drug Administration, assuming substitution of average U.S. population daily consumption of red meat with fish.

Calculations of Risk

1. Native Americans

Assumptions:

- a. MEI consumes 150 gms fish/day.
- b. Average consumption is 100 gms fish/day.
- c. 70 kilogram person.
- d. Lifetime exposure.
- e. Max. dioxin concentration in fish fillet = 24 pg/gm.
- f. Weighted average dioxin in fish fillet = 6.5 pg/gm.
- g. Population of 15,000.
- h. Risk Specific Dose of Dioxin = lifetime cancer risk of one in a million is:
0.006 pg/kg/day.

$$\begin{aligned} \text{Max. Daily Dose} &= (150 \text{ gms/day} \times 24 \text{ pg/gm}) / 70 \text{ kg person} \\ &= 51.43 \text{ pg dioxin/kg/day} \end{aligned}$$

$$\begin{aligned} \text{MIR} &= ((51.43 \text{ pg/kg/day}) / (0.006 \text{ pg/kg/day})) \times 10^{-6} \\ \text{MIR} &= 8.6 \times 10^{-3} \end{aligned}$$

$$\begin{aligned} \text{Avg. Daily Dose} &= (100 \text{ gms/day} \times 6.5 \text{ pg/gm}) / 70 \text{ kg person} \\ &= 9.28 \text{ pg dioxin/kg/day} \end{aligned}$$

$$\begin{aligned} \text{Avg. lifetime risk} &= ((9.28 \text{ pg/day}) / (0.006 \text{ pg/kg/day})) \times 10^{-6} \\ &= 1.5 \times 10^{-3} \end{aligned}$$

$$\begin{aligned} \text{Annual Cancer Incidence} &= (\text{Avg risk} \times \text{population}) / 70 \text{ year lifespan} \\ &= (1.5 \times 10^{-3} \times 15,000) / 70 \text{ yrs} \\ &= 0.33 \end{aligned}$$

2. Asian Americans

Assumptions are the same as with Native Americans. The population size is

average fillet concentration was 6.5 ppt (6.5 pg/gm). For purposes of estimating incremental lifetime cancer risk to the most exposed individual, a fillet concentration of 24 ppt was used. The weighted average dioxin concentration in the fillet of 6.5 ppt was used to derive the approximate average lifetime risk to subsistence and sports fishermen. The average exposure and average lifetime risk was used to estimate the annual cancer incidence in these sensitive subpopulations. In addition a human body weight of 70 kilograms was assumed to compute estimates of excess cancer risk.

CONCLUSIONS:

It is currently not possible to directly measure the association between the chronic dietary intake of dioxin contaminated freshwater fish, and the occurrence of specific forms of cancer in the exposed populations. The epidemiologic studies of these populations with a high dependency for subsistence fishing as a source of dietary animal protein have not been conducted. Therefore we have mathematically estimated lifetime excess cancer risk to the population residing near the Columbia River, as well as to low-income populations living in the vicinity of other mills in the U.S. This analysis is not intended to replace any previous risk assessments involving the human consumption of fish that has been contaminated with dioxin from the effluent discharged from paper mills, but is merely to illustrate that methodologies can be developed to estimate total populations at risk in the U.S.

The following are the results:

	<u>Pop.</u>	<u>MIR(a)</u>	<u>AVG Risk(b)</u>	<u>Cancer Inc.(c)</u>
Native Americans	15,000	8.6×10^{-3}	1.5×10^{-3}	0.33
Asian Americans	30,000	8.6×10^{-3}	1.5×10^{-3}	0.67
Total Risk	45,000	8.6×10^{-3}	1.5×10^{-3}	1.0
Low income families	610,000	5.4×10^{-3}	1.0×10^{-3}	9.3

(a) MIR is the maximum individual risk, and is associated with the highest fish consumption rate and the highest dioxin concentration in fish caught near paper mills.

(b) Average lifetime cancer risk is the excess cancer risk based on the average fish consumption rate for subsistence and sports fishermen, and the weighted average dioxin concentration in fish caught near paper mills.

(c) Cancer incidence is the estimated number of cancer cases per year within the

ANALYSIS OF THE POTENTIAL POPULATIONS AT RISK FROM THE
CONSUMPTION OF FRESHWATER FISH CAUGHT NEAR PAPER MILLS

Craig McCormack
Office of Policy Planning and Evaluation

David Cleverly 202-382-7891 (D.C.)
Office of Research and Development

April 23, 1990

INTRODUCTION:

OTS, OSW, and OW have conducted a detailed human and ecological risk assessment of environmental loadings of dioxin from bleached pulp and paper mills. In that analysis only maximum lifetime cancer risk and average lifetime cancer risk to the hypothetically exposed individual was estimated for various exposure scenarios. No estimation of potential population risk, especially to sensitive subgroups, was provided in the analysis. Since draft publication of these results, we have identified populations of Asians, and tribal Native Americans that reside along the banks of the Columbia River in Oregon. The State government indicates that there are eight bleached pulp and paper mills that directly discharge to the Columbia River. The State also indicates that freshwater fish caught from the Columbia river are the main source of animal protein for these people. They consume an average of 100 to 150 grams of fish flesh each day over the course of the year. These individuals are much more likely to catch and consume fish that has been contaminated with dioxin from the effluent discharged from the mills than other populations in the area. The Native Americans number about 15,000, and the Asians number about 30,000 people.

In addition to these subpopulations exposed by diet to dioxin, we have estimated that approximately 610,000 people living in the vicinity of pulp and paper mills have family incomes at or below the poverty level. These individuals are also expected to derive a significant portion of animal protein from both subsistence and sports fishing in rivers near paper mills. Subsistence fishermen consume about 100 grams of fish per day/1, and sports fishermen consume about 69 grams fish per day/2.

For purposes of the assessment of potential cancer risk, we have employed monitoring data of dioxin contamination in fresh water fish caught in the vicinity of bleached pulp and paper mills. This was developed by the Environmental Research Laboratory in Duluth Minnesota as part of the National Bioaccumulation Study of freshwater fish in the U.S. The range of detected TCDD equivalent concentration in the edible fish fillet was from 0.1 ppt - 24 ppt. The weighted

An exposure pathway consists of four necessary elements: a source and mechanism of chemical release into the environment, an environmental transport medium for the released chemical, a point of potential human contact with the environmental medium, and a human exposure route (eg., inhalation, dermal contact, ingestion) at the point of contact. Each pathway describes a unique potential mechanism by which a population, or an individual may be exposed to a chemical. For each exposure pathway, the environmental fate and persistence of the chemical from the point of discharge to the point of human contact is an important consideration. Many factors such as adsorption onto particulates, sedimentation, and solubility influence the degree of human exposure. These factors are highly variable in the environment. Consequently, a truly valid exposure assessment can only be conducted using site-specific data. To this purpose, a study of the levels of dioxin in the edible portions of Columbia River fish has been conducted. Additionally, the rates of consumption of locally caught fish were estimated.

Columbia River fish sampling

For the purpose of determining accurate species-specific concentrations of dioxin in edible fish fillets, a variety of species of fish were collected from six different sites along the Columbia River system by an independent laboratory and consultant. A total of 680 individual fish were sampled at the six sites. Species collected included top and bottom feeders as well as resident and anadromous populations. Migratory fish sampled included coho salmon, fall chinook salmon (upriver and tule) and summer steelhead trout. Resident species sampled included white sturgeon, largescale sucker, and carp. Results of sampling data are reported below¹.

Fillet TCDD Levels in Columbia River Fish (ppt)

Species	Sampling Site					
	1	2	3	4	5	6
Coho salmon	0.08	0.10	NS	NS	NS	NS
Fall chinook salmon (Upriver)	0.08	0.09	NS	NS	NS	NS
Fall chinook salmon (Tule)	0.31	0.18	NS	NS	NS	NS
Summer steelhead trout	0.07	0.07	NS	NS	NS	NS
White sturgeon	0.09	0.12	1.09	0.88	1.68	0.55
Largescale sucker	0.32	NS	0.39	0.19	0.22	0.26
Carp	0.79	NS	1.06	1.35	1.46	0.76

At Sites 1 and 2, located downstream of NWPPA pulp and paper mills, the geometric mean concentrations of TCDD in salmon ranged from 0.08 to 0.31 parts per trillion (ppt) and steelhead trout averaged 0.07 ppt. Sturgeon, sucker, and carp collected from sites 1, 2, 3, and 4 had fillet TCDD levels averaging

¹ Note: 80% of the anadromous and 45% of all species sampled had nondetectable levels of TCDD. Nondetectable samples were assigned a value equal to one half the limit of detection per EPA protocol. This results in a more conservative estimation of tissue TCDD levels because actual values could equal zero.

**ASSESSMENT OF THE HUMAN HEALTH
RISKS RELATED TO THE PRESENCE
OF DIOXINS IN COLUMBIA RIVER FISH**

Prepared by:

**Russell E. Keenan, Ph.D.
Alan H. Parsons, Ph.D.
Ellen S. Ebert
Pamela D. Boardman, M.P.H.
Steven L. Huntley
Mary M. Sauer, M.S.P.H.**

**ChemRisk™
A McLaren Company**

**1685 Congress Street
Stroudwater Crossing
Portland, ME 04102
(207) 774-0012
(207) 774-8263**

January 8, 1990



ChemRisk
A McLaren Company

23. Isensee, A.R. 1978. Bioaccumulation of 2,3,7,8-tetrachlorodibenzo-para-dioxin. *Ecol. Bull.* 27:255-262.
24. Adams, W.J., G.M. DeGraeve, T.D. Sabourin, J.D. Cooney and G.M. Mosher. 1986. Toxicity and bio-concentration of 2,3,7,8-TCDD to fathead minnows (*Pimephales promelas*). *Chemosphere* 15:1503-1511.
25. Adams, W.J. and K.M. Blaine. 1986. A water solubility determination of 2,3,7,8-TCDD. *Chemosphere* 15:1397-1400.
26. Kenaga, E.E. and C.A.J. Goring. 1980. Relationship between water solubility, soil sorption, octanol-water partitioning, and concentration of chemicals in biota. In J.G. Eaton, P.R. Parrish and A.C. Hendricks, eds., *Aquatic Toxicology*. STP 707. American Society for Testing and Materials, Philadelphia, PA, pp. 78-115.
27. Chiou, C.T., V.H. Freed, D.H. Schmedding and R.L. Kohnert. 1977. Partition coefficients and bio-accumulation of selected organic chemicals. *Environ. Sci. Technol.* 11:475-478.
28. Mauck, W.L., P.M. Mehrle and F.L. Mayer. 1978. Effects of the polychlorinated biphenyl Aroclor 1254 on growth, survival, and bone development in brook trout (*Salvelinus fontinalis*). *J. Fish. Res. Board Can.* 35:1084-1088.
29. Buckler, D.R., A. Witt, Jr., F.L. Mayer and J.N. Huckins. 1981. Acute and chronic effects of Kepone and mirex on the fathead minnow. *Trans. Am. Fish. Soc.* 110:270-280.
30. Cleveland, L., D.R. Buckler, F.L. Mayer and D.R. Branson. 1982. Toxicity of three preparations of pentachlorophenol to fathead minnows: A comparative study. *Environ. Toxicol. Chem.* 1:205-212.
31. Mayer, F.L., P.M. Mehrle and W.P. Dwyer. 1975. Toxaphene effects on reproduction, growth, and mortality of brook trout. EPA-600/3-75-013. U.S. Environmental Protection Agency, Duluth, MN.
32. Mayer, F.L., P.M. Mehrle and W.P. Dwyer. 1977. Toxaphene: Chronic toxicity to fathead minnows and channel catfish. EPA-600/3-77-069. U.S. Environmental Protection Agency, Duluth, MN.
33. Mount, D.I. 1962. Chronic effects of endrin on bluntnose minnows and guppies. U.S. Fish and Wildlife Service Research Report No. 58. Washington, DC.

tremely toxic to rainbow trout, even our lowest exposure concentration was too high to derive a NOEC.

Acknowledgement—We are grateful to the many people from the Fish and Wildlife Service (FWS), Battelle and Monsanto who assisted in conducting these studies. We especially thank Mr. Dave Zumwalt for his efforts in designing the specialized diluter exposure system, and Mr. Zumwalt and Mr. George Holroyd for their outstanding efforts in constructing and calibrating the system. We appreciate the excellent advice and assistance of Dr. Mark Ellersieck and Ms. Linda Sappington in analyzing the data, and the technical assistance of Mr. Rick Archeski in analyzing the behavioral data. We give special thanks to Dr. Paul Eschmeyer, Editorial Section, Office of Information Transfer, FWS, Fort Collins, Colorado, for his review of the manuscript and for editorial advice.

REFERENCES

- Olie, K., M.v.d. Berg and O. Hutzinger. 1983. Formation and fate of PCDD and PCDF from combustion processes. *Chemosphere* 12:627-636.
- Firestone, D. 1972. Determination of polychlorodibenzo-*p*-dioxins and related compounds in commercial chlorophenols. *J. A.O.A.C.* 55:85-92.
- Ballschmiter, K., W. Zoller, C. Scholz and A. Notrodt. 1983. Occurrence and absence of polychlorodibenzofurans and polychlorodibenzodioxins in fly ash from municipal incinerators. *Chemosphere* 12: 585-594.
- Petty, J.D., D.L. Stalling, L.M. Smith and J.L. Johnson. 1983. Occurrence and potential impact of PCDF's and PCDD's in aquatic ecosystems. In D.D. Hemphill, ed., *Trace Substances in Environmental Health—XVII*. University of Missouri Press, Columbia, MO, pp. 96-102.
- Crummett, W.B. 1982. Environmental chlorinated dioxins from combustion: The trace chemistries of fire hypothesis. In O. Hutzinger, R.W. Frei, E. Merian and F. Pocchiari, eds., *Chlorinated Dioxins and Related Compounds Impact on the Environment*. Pergamon Press, Elmsford, NY, p. 261.
- Ryan, J.J., P.-Y. Lan, J.C. Pilon and D. Lewis. 1983. 2,3,7,8-tetrachlorodibenzo-*p*-dioxin and 2,3,7,8-tetrachlorodibenzofuran residues in Great Lakes commercial and sport fish. In G. Choudhary, L.H. Keith and C. Rappe, eds., *Chlorinated Dioxins and Dibenzofurans in the Total Environment*. Butterworth, Boston, MA, pp. 87-97.
- Columbia National Fisheries Research Laboratory. 1983. Impacts of contaminants on early life stages of striped bass. In P.M. Mehrle and J.L. Ludke, eds., *Progress Report*. U.S. Fish and Wildlife Service, Columbia, MO.
- Belton, T.J., R. Hazen, B.E. Ruppel, K. Lockwood, R. Mueller, E. Stevenson and J.J. Post. 1985. A study of dioxin contamination in select finfish, crustaceans, and sediments of New Jersey Waterways. Office of Science and Research, New Jersey Department of Environmental Protection, Trenton, NJ.
- U.S. Food and Drug Administration. 1981. Correspondence from FDA Commissioner Dr. Arthur Hall Hayes, Jr., to Governor Milliken of Michigan concerning the public health significance of TCDD contaminant "levels of concern" for finfish in Great Lakes. 26 August.
- Helder, T. 1980. Effects of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) on early life stages of the pike (*Esox lucius* L.). *Sci. Total Environ.* 14:255-264.
- Helder, T. 1981. Effects of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) on early life stages of rainbow trout (*Salmo gairdneri*, Richardson). *Toxicology* 19: 101-112.
- Miller, R.A., A.N. Logan and C.L. Hawkes. 1979. Toxicity of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin in aquatic organisms. *Environ. Health Perspect.* 5: 177-186.
- Cooper, K.R., J. Schell, P. Kahn and M. Gallo. 1986. The effects of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) on the development and survival of the Japanese medaka (*Oryzias latipes*). *Toxicologist* 6:27 (Abstract).
- Kleeman, J.M., J.R. Olson, S.M. Chen and R.E. Peterson. 1986. Metabolism and disposition of 2,3,7,8-tetrachlorodibenzodioxin in rainbow trout. *Toxicol. Appl. Pharmacol.* 83:391-401.
- Kleeman, J.M., J.R. Olson, S.M. Chen and R.E. Peterson. 1986. 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin metabolism and disposition in yellow perch. *Toxicol. Appl. Pharmacol.* 83:402-411.
- Branson, D.R., I.T. Takahashi, W.M. Parker and G.E. Blau. 1985. Bioconcentration kinetics of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin in rainbow trout. *Environ. Toxicol. Chem.* 4:779-788.
- American Public Health Association, American Water Works Association and Water Pollution Control Federation. 1980. *Standard Methods for the Examination of Water and Wastewater*, 15th ed. American Public Health Association, Washington, DC.
- Smith, L.M. 1981. Carbon dispersed in glass fibers as an adsorbent for contaminant enrichment and fractionation. *Anal. Chem.* 53:2152-2154.
- Smith, L.M., D.L. Stalling and J.L. Johnson. 1984. Determination of part-per-trillion levels of dibenzofurans and dioxins in environmental samples. *Anal. Chem.* 56:1830-1842.
- Drummond, R.A., C.L. Russom, D.L. Geiger and D.L. DeFoe. 1986. Behavioral and morphological changes in fathead minnow, *Pimephales promelas*, as diagnostic endpoints for screening chemicals according to mode of action. In *Aquatic Toxicology and Hazard Assessment: Ninth Symposium*. American Society for Testing and Materials, Philadelphia, PA, pp. 415-435.
- Snedecor, G.W. and W.C. Cochran. 1967. *Statistical Methods*, 6th ed. Iowa State University Press, Ames, IA.
- Blau, G.E., W.B. Neely and D.R. Branson. 1975. Ecokinetics: A study of the fate and distribution of chemicals in laboratory ecosystems. *AIChE J.* 21: 854-861.

Table 11. Measured bioconcentration factors (BCF)^a for 2,3,7,8-tetrachlorodibenzofuran (TCDF) in rainbow trout exposed continuously for 28 d

Days of exposure	TCDF exposure concentration (ng/L)	
	0.41	3.93
7	3,976	3,028
14	4,390	2,366
21	2,561	2,730
28	6,049	2,455

$$^a\text{BCF} = (C_f / C_w) \times 1,000.$$

CONCLUSIONS

We conclude that TCDD and TCDF—especially TCDD—are extremely toxic to rainbow trout. A relative comparison of TCDD and TCDF chronic

toxicities with those of several other organochlorine compounds demonstrated that TCDD is more than 10,000 times as toxic to fish as either endrin or toxaphene, and that TCDF is about 1,000 times more toxic than either of these insecticides (Table 13). Results from previous toxicity studies with fish by Helder [10,11], Miller et al. [12] and Adams et al. [24] demonstrated the toxicity of TCDD to be in the low ng/L range. However, we have shown that our lowest TCDD exposure concentration of 38 pg/L induced significant adverse effects on survival, growth, and behavioral responses. Results from our studies are perhaps more adequate estimates of TCDD toxicity because we used continuous exposure techniques for a longer time than had been used in previous studies. For similar reasons, we believe the BCF for TCDD derived from our studies is a more accurate estimate of the bioconcentration potential than are the estimates reported by Branson et al. [16] and Adams et al. [24]. Although we showed that TCDD was ex-

Table 12. Estimated bioconcentration kinetics^a for TCDF in rainbow trout exposed to 2,3,7,8-tetrachlorodibenzofuran (TCDF) for 28 d

Kinetic parameter	TCDF exposure concentration (ng/L)	
	0.41	3.93
K_1 , uptake rate constant (d ⁻¹)	1.228 (1.191)	6.852 (8.037)
K_2 , depuration rate constant (d ⁻¹)	0.28 (0.30)	2.60 (3.04)
BCF- K_{12}	4,449 (6,481)	2,640 (4,379)
Time to reach 90% steady state (d)	8 (9)	0.90 (1.04)
Elimination half-life, $t_{1/2}$ (d)	3 (3)	0.27 (3.1)

Values in parentheses represent standard deviations.

^aEstimated kinetics using BIOFAC [22].

Table 13. Chronic no effect concentrations ($\mu\text{g/L}$) for growth and survival of freshwater fish exposed to various organochlorine chemicals

Chemical and fish species	Days of exposure	Survival	Growth ^a	Source
Aroclor 1254, brook trout	118	9.0	9.0	[23]
Chlorodewone, fathead minnows	120	>0.31	>0.31	[29]
Pentachlorophenol (ultrapure), fathead minnows	90	>139	>139	[30]
Toxaphene, brook trout	90	>0.50	0.38	[31]
Toxaphene, channel catfish	90	0.096	0.20	[32]
Endrin, bluntnose minnows	30	0.1	0.1	[33]
TCDD, rainbow trout	56	<0.000038	<0.000038	This study
TCDF, rainbow trout	56	0.00179	0.00041	This study

^aChange in weight of fish.

Table 9. Estimated bioconcentration kinetics* of 2,3,7,8-tetrachlorodibenzodioxin (TCDD) in rainbow trout exposed to TCDD for 28 d

Kinetic parameter	TCDD exposure concentrations (pg/L)			
	38	176	382	702 ^b
K_1 , uptake rate constant (d ⁻¹)	1,852 (132) ^c	1,543 (69)	1,337 (61)	1,591 (53)
K_2 , depuration rate constant (d ⁻¹)	0.047 (0.01)	0.041 (0.005)	0.015 (0.005)	0.043 (0.005)
BCF- K_1	39,000 (9,400)	37,560 (5,032)	86,000 (25,000)	36,637 (4,290)
Time to reach 90% steady state (d)	49 (11)	56 (7)	149 (43)	53 (6)
Elimination half-life, $t_{1/2}$ (d)	15 (3)	17 (2)	48 (13)	16 (2)

*Estimated kinetics using BIOFAC [22].

^bMean of TCDD measurements at days 1, 7, 14 and 21.

^cValues in parentheses represent standard deviations.

estimate. The range in BCF we observed was substantially greater than the BCF of 7,000 to 9,270 previously reported in the literature [16,23,24]. Results from our study were perhaps better estimates of the equilibrium BCF because we used a continuous exposure in flowing water for a longer period at lower exposure concentrations. Based on the water solubility of 7.9 ng/L for TCDD [25], the predicted BCF would be about 467,000 if the regression equation, $\log \text{BCF} = 2.791 - 0.564 \log S$ [26], were used; it would be about 1,000,000 if the regression equation, $\log \text{BCF} = 3.41 - 0.508 \log S$ [27], were used.

We suggest from our experimental data that the overall bioconcentration from water to fish is probably much less than the theoretical estimation. The obvious toxicity-induced effects of TCDD, as well as potential influences on membrane transport and other metabolic functions, could account for the observed BCF being less than the theoretical predictions.

The estimated elimination half-life ($t_{1/2}$) from the BIOFAC ranged from 15 to 17 d among exposure concentrations, except for the estimated half-life of 48 d in fish exposed to 382 pg/L. Adams et al. [24] reported an elimination half-life of 15 d, and Branson et al. [16] reported a half-life of 58 d. In the fish exposed to 38 pg/L for 28 d and then held during the 28-d depuration phase, the whole-body residues did not decrease sufficiently to support an estimated half-life in the range of 15 to 17 d (Table 7). The whole-body residues decreased from 0.93 (± 0.05) to 0.74 (± 0.11) ng/g during the 28-d depuration phase. Excessive mortality in the other TCDD exposure concentrations precluded our obtaining experimental data on elimination in fish exposed to higher concentrations.

The uptake and depuration of TCDF were mea-

sured in fish exposed to 0.41 and 3.93 ng/L. In contrast to TCDD kinetics, TCDF uptake reached an apparent steady-state equilibrium after only 7 d of exposure (Table 10). Whole-body residues of TCDF did not increase after 7 d of exposure in fish exposed to 0.41 and 3.93 ng/L. In fish exposed for 28 d, the measured BCF was 6,049 at 0.41 ng/L and 2,455 at 3.93 ng/L (Table 11). The estimated bioconcentration kinetics of TCDF are shown in Table 12. Rainbow trout apparently were able to readily eliminate or metabolize TCDF. The whole-body residues in fish held during the 28-d depuration phase suggested a very short elimination half-life for this compound. Although TCDD and TCDF are structurally very similar, their bioconcentration kinetics and toxicities were found to be very different.

Table 10. Whole-body residues of 2,3,7,8-tetrachlorodibenzofuran (TCDF) in rainbow trout continuously exposed for 28 d followed by a 28-d depuration phase

Phase and day	Mean TCDF exposure concentration (ng/L)		
	0	0.41	3.93
Exposure			
0	<0.06		
7	0.17	1.63 (0.89)	11.9 (2.88)
14	0.12	1.80 (0.62)	9.30 (2.26)
21	0.19	1.05 (0.44)	10.7 (2.24)
28	0.22	2.48 (1.32)	9.65 (1.30)
Depuration			
28	<0.06	0.09 (0.06)	0.54 (0.08)

Values represent the mean (with standard deviation in parentheses) of four observations performed on individual fish, expressed as ng/g wet weight.

Table 7. Whole-body residues of 2,3,7,8-tetrachlorodibenzodioxin (TCDD) in rainbow trout continuously exposed for 28 d followed by a 28-d depuration phase

Phase and day	Mean TCDD exposure concentration (pg/L)				
	0	38	176	382	789
Exposure					
0	<0.02] ^a				
7	0.012 ^a	0.41 ^b (0.05) [0.38]	1.68 ^c (0.15)	3.44 ^d (0.20)	6.75 ^e (0.37) [6.78]
14	0.022 ^c	0.77 ^d (0.06) [0.71]	2.31 ^e (0.18)	6.22 ^f (0.67)	11.67 ^f (0.68) [12.3]
21	0.023 ^d	0.99 ^e (0.03) [0.96]	3.87 ^f (0.14)	10.10 ^g (1.42) [11.3]	15.41 ^g (0.86) [17.6]
28	0.027 ^e [<0.02]	0.98 ^f (0.05) [0.93]	4.52 (0.41)	10.95 ^g (0.87) [10.8]	ND
Depuration					
28	0.22 ^a	0.74 ^b (0.11) [0.78]	ND	ND	ND

Values (ng/g) represent the mean (with standard deviation in parentheses) of individual fish analyzed radiometrically for [³H]TCDD. Values in brackets represent GC-MS analyses performed on a pooled sample of fish, expressed as ng/g.

ND, not determined.

^aOne observation.

^bSix observations.

^cTwo observations.

^dFour observations.

^eEight observations.

Table 8. Measured bioconcentration factor (BCF)^a for 2,3,7,8-tetrachlorodibenzodioxin (TCDD) in rainbow trout exposed continuously for 28 d

Days of exposure	Measured TCDD exposure concentration (pg/L)			
	38	176	382	789
7	10,736	9,551	9,005	8,558
14	20,131	15,966	16,282	14,790
21	25,947	21,977	26,439	19,510
28	25,789	25,670	28,664	ND

^aBCF = (C_f/C_w) × 1,000. ND, not determined.

estimated BCF at 90% steady-state equilibrium ranged from about 37,000 to 86,000 (Table 9). Fish exposed to 382 pg/L showed somewhat different kinetics in that the estimated BCF, time to reach steady-state equilibrium and half-life were greater than in the other exposure concentrations. The relatively low K_2 value, compared with K_2 values from other exposure groups, suggested that

metabolic effects may have been reducing the elimination of TCDD.

Ideally, the BCF should be estimated in fish not showing toxicity-induced responses. Inasmuch as the fish exposed to the lowest TCDD concentration of 38 pg/L showed the least toxic responses during the 28-d exposure, we suggest that the predicted BCF of 39,000 is probably the most reliable.

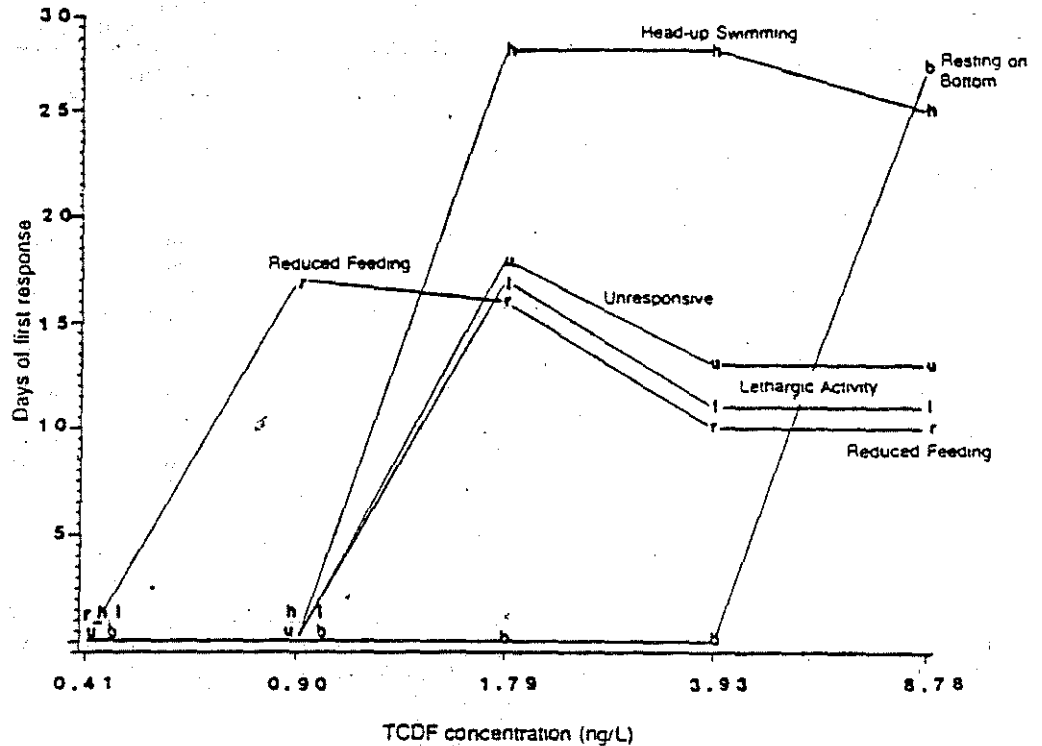


Fig. 3. Days of TCDF exposure required to induce behavioral changes in rainbow trout during a 28-d exposure.

reactions increased significantly in the three highest exposure groups. Recovery of behavioral function was evident in all but the two highest treatment groups by the end of the 28-d depuration period.

Neither TCDD nor TCDF induced observable responses in coloration or morphological characteristics such as scoliosis or lordosis; however, fin erosion was observed in fish in the lowest TCDD exposure concentration at the end of the depuration phase. In addition, exposure to both TCDD and TCDF induced observable, unique characteristics in fecal appearance. The two highest exposure concentrations of each toxicant induced long, stringy faces within the last several days of the 28-d exposure phase.

Bioconcentration

The BCFs for TCDD and TCDF differed greatly during the 28 d of continuous exposure. Whole-body residues throughout the exposure phase were in the low end of a 0.41 to 15.41 ng/g range for TCDD (Table 7). The greater the exposure concentration, the higher were the whole-body residues of TCDD during the 28-d exposures. The measured BCF for TCDD ranged from 8,558 to 28,664 dur-

ing the exposure and did not appear to reach steady-state equilibrium in any of the exposure concentrations during the 28-d exposure (Table 8). The GC-MS analyses for whole-body TCDD levels agreed closely with the whole-body radiometric determinations for [^3H]TCDD. This similarity suggests that the ^3H label on the TCDD molecule was not being exchanged, and that the ^3H detected in the fish tissue was associated with the parent TCDD molecule. This similarity also indicates that organic extracted [^3H]TCDD was not being appreciably metabolized during the exposure and depuration phases. However, as judged by the results of total combustion of fish samples, it appears that about 30% of the ^3H label was associated with polar compounds that could have been TCDD metabolites.

Since it was apparent that a steady-state equilibrium for TCDD bioconcentration had not been reached after 28 d of exposure, we used the BIOFAC computer program [22] to estimate the bioconcentration kinetics for TCDD based only on data from the exposure phase. The estimated BCF at steady-state equilibrium was relatively consistent in fish from different exposure concentrations; the

Table 6. Weight (g) of rainbow trout continuously exposed to 2,3,7,8-tetrachlorodibenzofuran (TCDF) for 28 d followed by a 28-d depuration period

Phase and day	Mean TCDF exposure concentration (ng/L)					
	0	0.41	0.90	1.79	3.93	8.78
Exposure ^a						
7	0.33	0.35	0.37	0.36	0.35	0.32
14	0.39	0.40	0.43	0.42	0.31	0.41
21	0.55	0.47	0.45	0.50	0.39 ^b	0.44
28	0.59	0.59	0.53	0.48 ^b	0.50 ^b	0.46 ^b
Depuration ^c						
28	1.1	0.91	0.85 ^b	0.80 ^b	0.79 ^b	0.71 ^b

Weights represent the mean of 8 to 24 observations.

^aAnalysis of variance used for testing the effects of exposure concentration and time; $F = 4.37$ (time \times exposure), $p < 0.05$.

^bSignificantly different from controls (t test; $p < 0.05$).

^cAnalysis of variance used for testing the effect of exposure concentration; $F = 5.73$ (exposure), $p < 0.03$.

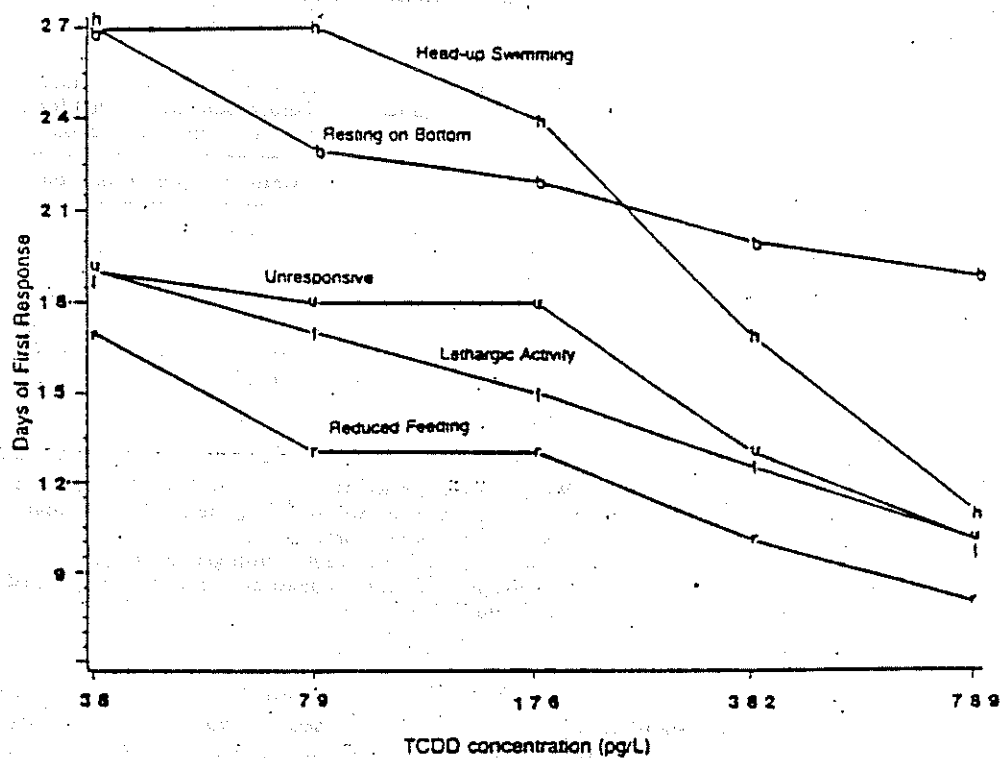


Fig. 2. Days of TCDD exposure required to induce behavioral changes in rainbow trout during a 28-d exposure.

ia. The feeding inhibition and other behavioral changes were not reversed during the 28-d depuration period.

Behavioral reactions similar to those observed

in the TCDD exposure were observed in fish exposed to TCDF; however, the responses were of lesser magnitude (Fig. 3). Lethargy, unresponsiveness to external stimuli and diminished feeding

Table 4. Cumulative mortality (%) in rainbow trout continuously exposed to 2,3,7,8-tetrachlorodibenzofuran (TCDF) for 28 d followed by a 28-d depuration period

Phase and day	Mean TCDF exposure concentration (ng/L)						F value
	0	0.41	0.90	1.79	3.93	8.78	
Exposure							
7	0	1	1	2	2	12	2.54
14	0	1	3	3	16 ^a	22 ^a	4.51 ^a
21	0	2	5	3	18 ^a	23 ^a	3.73 ^a
28	0	2	6	3	18 ^a	28 ^a	4.49 ^a
Depuration							
7	0	2	6	3	20 ^a	37 ^a	6.53 ^a
14	0	2	6	3	22 ^a	46 ^a	8.56 ^a
21	0	2	6	3	22 ^a	46 ^a	8.56 ^a
28	0	2	6	3	22 ^a	46 ^a	8.56 ^a

^aSignificantly different from controls by least-significant-difference multiple means comparison test ($p < 0.05$).

^bSignificant treatment effect (one-way analysis of variance; $p < 0.05$).

Table 5. Weight (g) of rainbow trout continuously exposed to 2,3,7,8-tetrachlorodibenzodioxin (TCDD) for 28 d followed by a 28-d depuration period

Phase and day	Mean TCDD exposure concentration (pg/L)					
	0	38	79	176	382	789
Exposure ^a						
7	0.37	0.36	0.38	0.33	0.36	0.33
14	0.41	0.39	0.42	0.33	0.35	0.40
21	0.48	0.35 ^b	0.40	0.39	0.39	0.44
28	0.61	0.53 ^b	0.47 ^b	0.49 ^b	0.45 ^b	0.42 ^b
Depuration ^a						
28	1.1	0.54 ^b	— ^d	— ^d	— ^d	— ^d

Weights are expressed as the mean of 7 to 22 observations.

^aAnalysis of variance used for testing the effects of exposure concentration and time; $F = 2.43$ (time \times exposure), $p < 0.03$.

^bSignificantly different from control group (t test; $p < 0.05$).

^cFish weight in depuration phase analyzed by t test adjusted for unequal variances.

^dNo measurements made.

after 21 d of exposure but the decrease observed was significant only in the group exposed to 3.93 ng/L. Decreased growth was evident in fish exposed to 0.90 ng/L or more after the 28-d depuration phase. The NOEC for TCDF based on growth during the exposure and depuration phases was 0.41 ng/L. This was the most sensitive response to TCDF.

Behavioral responses

Exposure to TCDD and TCDF induced behavioral impairments that became progressively worse over time and with increasing concentration. The

two highest concentrations of TCDD caused behavioral changes within two weeks of exposure that included lethargic swimming, feeding inhibition, and lack of response to external stimuli, for example, waving of hand above aquaria (Fig. 2). Similar changes were evident in all groups exposed to TCDD by the end of the 28-d exposure, whereas the behavior of the controls remained normal. Although significant mortality did not occur in the two lowest exposure concentrations during 28 d of exposure, the fish were seriously stressed, as evidenced by an abnormal head-up swimming posture and confinement to the bottom of the aquaria.

water. The NOEC of TCDD, based on mortality throughout the exposure and depuration phases, was less than the lowest exposure concentration of 38 pg/L (parts per quadrillion).

Further insight into the NOEC was inferred from the background concentration of 1.1 pg/L of TCDD detected by radiometric analyses in the control group throughout the study. This low background was probably due to volatilization of TCDD and translocation within the diluter system. Mortality in the control group was 5% during the exposure phase and most of the depuration phase. We suggest from these observations that the NOEC was between 1.1 and 38 pg/L. However, the minimal detectable limits for TCDD in water by GC-MS were not adequate to confirm the 1.1 pg/L detected by radiometric analyses.

A 56-d LC50 of 46 pg/L was calculated from the combined mortality data for the exposure and depuration phases. The surface response curve describing the relation among daily mortality, time and exposure concentrations is shown in Figure 1. The quadratic equation describing this relation was used to derive the 56-d LC50.

Significant mortality was induced by TCDF in rainbow trout within 14 d at exposure concentrations of 3.93 and 8.78 ng/L (Table 4). No additional significant mortality occurred throughout the 28-d exposure phase. During the depuration

phase, additional mortality occurred only in fish exposed to 8.78 ng/L. The NOEC throughout the exposure and depuration phases was 1.79 ng/L.

Growth

Growth as measured by the weight of the fish was significantly decreased by all TCDD concentrations after 28 d of exposure (Table 5). There were trends of decreased growth within 14 d of exposure, but significant effects in all concentrations were not observed until 28 d of exposure. During the 28-d depuration phase, growth was measured in fish from only the control and the lowest exposure concentration because of the excessive mortality in the higher TCDD exposure concentrations. There was a significant decrease in growth in the fish exposed to 38 pg/L after the 28-d depuration phase. Fish exposed to 38 pg/L TCDD did not grow during the depuration phase, whereas the weight of fish in the control group exhibited an 80% increase. The NOEC of TCDD on growth during the exposure and depuration phases was less than the lowest exposure concentration of 38 pg/L.

TCDF exposure concentrations of 1.79, 3.93 and 8.78 ng/L significantly decreased the growth of rainbow trout within 28 d of exposure (Table 6). There were trends toward decreased growth

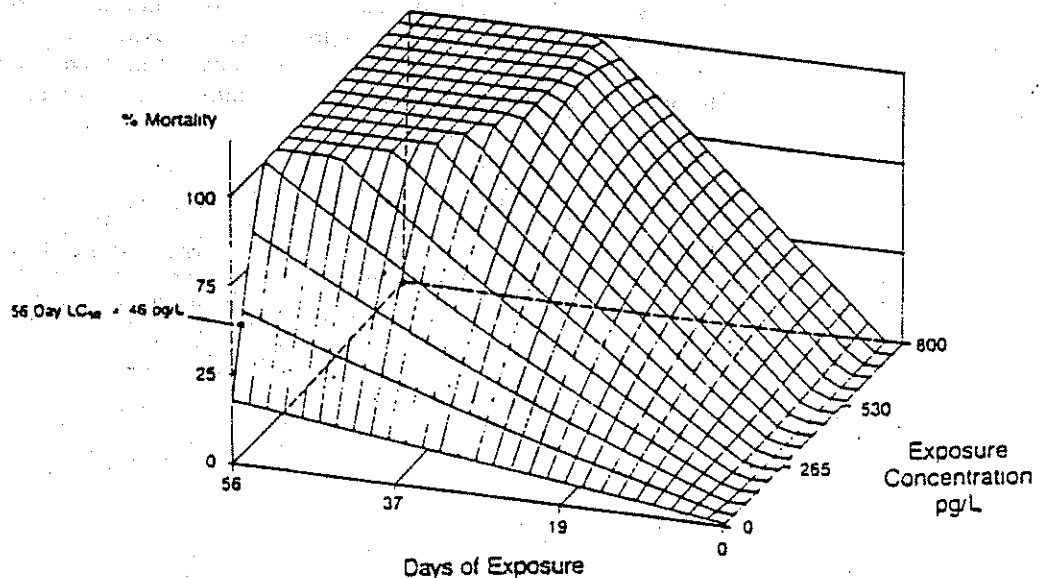


Fig. 1. Surface response describing the relation among daily mortality, time of exposure during the 28-d exposure and 28-d depuration phases, and TCDD exposure concentrations. The quadratic relation was used to derive a 56-d LC50 value of 46 pg/L TCDD for rainbow trout.

mined differences among means by calculating a *t* statistic, using the standard error of the difference for a split-plot design. For growth of TCDD-exposed fish during the depuration phase, we tested the control and lowest exposure concentration groups for equal population means, using a two-sample *t* test adjusted for unequal variance where appropriate [21].

The cumulative number of days on which fish showed abnormal behavior, from the time of induction to the day of depuration, was analyzed by simple regression against concentration, to provide an estimate of the behavioral responses to chemical exposure.

The BIOFAC computer program [22] was used to estimate the bioconcentration kinetics for TCDD and TCDF. Data from only the exposure phase in each study were used to estimate the kinetics because the number of fish residue samples available during the depuration phase was not adequate. In addition, the fish were held in their original exposure test tanks during the depuration phase, which resulted in the presence of the toxicants in the water because they desorbed from the glass aquaria. Because water concentration measurements and sufficient fish to sample during the depuration phase were not available, we were unable to use data from the depuration phase to estimate rate constants for the toxicants.

To estimate the 56-d LC50 value for TCDD, we computed a multiple-regression model to determine the relationship between percent mortality (arc-sin transformation) to concentration and time

of exposure. The linear statistical model contained the effects of linear concentration (CL), days of exposure linear (DL), concentration quadratic (CQ), and day of exposure quadratic (DQ): CL * DL, CL * DQ, CQ * DL and CQ * DQ [21]. We used a quadratic function relationship to estimate the concentration of TCDD at a constant mortality (50%) and period of exposure (56 d).

RESULTS AND DISCUSSION

Mortality

TCDD induced significant mortality in rainbow trout within 14 d of exposure in the highest exposure concentration (789 pg/L), and there was a trend toward increased mortality in fish exposed to 176 and 382 pg/L (Table 3). After 28 d of exposure, significant mortality was evident in the three highest exposure concentrations; the no observed effect concentration (NOEC) was 79 pg/L. Although no mortality was observed, fish in the 38 and 79 pg/L exposure groups were obviously stressed, as judged by reduced growth and behavioral responses. Only rainbow trout in the control group and the three lowest exposure concentrations were observed during the 28-d depuration phase of the study; fish in the two highest exposure concentrations were excluded because the survivors were few and obviously stressed. Significant mortality continued to occur throughout the depuration period in fish previously exposed to 38, 79, and 176 pg/L. There was no apparent recovery in the fish during the 28-d depuration period in clean

Table 3. Cumulative mortality (%) in rainbow trout continuously exposed to 2,3,7,8-tetrachlorodibenzodioxin (TCDD) for 28 d followed by a 28-d depuration period

Phase and day	Mean TCDD exposure concentration (pg/L)						F value
	0	38	79	176	382	789	
Exposure							
7	5	0	1	4	6	10	1.79
14	5	1	1	13	17	33*	5.48*
21	5	3	9	36*	46*	74*	28.02*
28	5	6	18	50*	73*	85*	27.51*
Depuration							
7	5	12	64*	85*	—	—	9.33*
14	5	22	78*	95*	—	—	30.49*
21	7	33	83*	95*	—	—	28.63*
28	7	45*	83*	95	—	—	27.72*

*Significantly different from controls by least-significant-difference multiple means comparison test ($p < 0.05$).

**Significant treatment effect (one-way analysis of variance; $p < 0.05$).

†Exposure groups not part of depuration phase.

native dioxin would have had an easily discernible effect on this pattern. Procedural background controls showed no 2,3,7,8-TCDD (limit of quantitation, less than 0.006 ng/g) by radiometric analysis and no TCDF (limit of quantitation, less than 0.06 ng/g) by GC-MS. The limit of quantitation for [^3H]TCDD was also less than 0.06 ng/g by GC-MS.

Analyses of fish food were carried out by the same procedure used for fish samples, and analyses of [^3H]TCDD and TCDF stock solutions were performed by direct dilution before analysis.

We computed percent recoveries of [^{13}C]TCDD and [^{13}C]TCDF internal standards by the less precise external standard technique, using the responses of the [^{13}C]TCDD and [^{13}C]TCDF internal standards; the recoveries of [^{13}C]TCDF and [^{13}C]TCDD, respectively, are listed here according to the various matrices: stock solutions, $71 \pm 30\%$ and $71 \pm 33\%$; exposure water, $134 \pm 55\%$ and $109 \pm 52\%$; fish, $101 \pm 37\%$ and $117 \pm 46\%$; all matrices combined, $112 \pm 51\%$ and $105 \pm 47\%$.

Determination of total concentration of [^3H]TCDD species in fish by biological material oxidation procedure

Determinations of total body burden of [^3H]TCDD residues in fish, as opposed to extractable residue, were made on homogenate aliquots of individual fish by the method of total burn, followed by liquid scintillation radiometric analysis of the combustion products. A Harvey Biological Materials Oxidizer (Model OX-100, R. J. Harvey Instrument Corp., Hillsdale, NJ) and a Harvey tritium cocktail (lot No. DC02) were used in the procedure. The combustion/trapping efficiency was 84% with triplicate analyses of a [^{14}C]PCB standard. Cryogenic traps and dry ice and methanol were used to trap the tritiated water produced in the combustion. The combustion/trapping efficiency observed for a standard of [^3H]TCDD was $89 \pm 3\%$ for spiked fish tissue. The scintillation counting efficiency when the tritium cocktail was used was 37%, and radioactivity was calculated from scintillation analysis using the equation, $\text{dpm} = \text{cpm}/0.64 \times S$, after subtraction of 50 cpm background.

Samples that had previously been weighed, wrapped in filter paper and aluminum foil and stored in the freezer were transferred along with the approximately 1-cm² pieces of filter paper to the quartz combustion boats. Before combustion of samples, we ran a series of blanks and spikes to ensure that performance was satisfactory. Each sample was combusted twice into the cryogenic

trap, which contained about 0.5 ml residual methanol. The glass elbow connecting the trap and oxidation chamber was heated with a hot air gun during the procedure to prevent loss by condensation. The condensed residue was transferred from the trap to a scintillation vial with three 5-ml portions of the cocktail. We then washed the trap thoroughly three times with methanol, leaving about 0.5 ml to aid in the next trapping. Because previous tests had indicated that carryover between sample combustions was a potential problem, blank combustions were performed after each sample and control. Scintillation analysis of the blanks showed that carryover was negligible.

Observation of fish for behavioral responses

The behavioral responses of rainbow trout were assessed daily during the TCDD and TCDF exposures. A checklist of behavioral reactions modified from Drummond et al. [20] was used to systematically document and characterize abnormal responses. The responses included coloration, activity (hyperactive, lethargic), excitability by external stimuli (hyperactive, unresponsive), location in aquaria, mode of swimming (head-up, frequent sinking and rising, swimming on side, swimming on back, free swimming), feeding, and morphological observations (bent spine, fin erosion). Observations were made each day by the same observer at the time of feeding.

An aberrant behavioral reaction was recorded when at least one fish in a given treatment responded in a manner that obviously differed from that of controls. Although no attempt was made to quantify the number of fish responding abnormally, an overall measure of the onset, duration and sequence of behavioral changes was made from the systematic daily observations.

Statistical analyses

Daily mortality was analyzed by one-way analysis of variance on the arc-sin transformed values. Differences among means were determined using Fisher's least significant difference (LSD) procedure [21].

Growth as measured by weight or length was analyzed by analysis of variance, including the effects of treatment, replicate within treatment, day, treatment \times day, and replicate (treatment \times day). Since the replicates, not the individual fish, were the experimental unit, replicate within treatments was used as the error term for testing the effect of treatment, and replicate (treatment \times day) was used as the error term for testing the effects of day and treatment \times day. We deter-

We applied the sample to alumina (Bio-Rad AG4 acid alumina, 3.5 ml = 3.65 g activated at 190°C) packed in a 5-ml graduated pipet with solvent reservoir using multiple washings of hexane totaling 5.0 ml. The column was then washed with 10 ml 5% CH₂Cl₂ in hexane (discarded) and the analyte recovered with 10 ml 20% CH₂Cl₂/hexane. The sample was evaporated just to dryness by rotary evaporation and transferred with three 1-ml portions of CH₂Cl₂ to a conical vial. The solvent was gently removed under a stream of nitrogen. The sample was then dissolved in a minimum of 5 μ l *o*-xylene in preparation for GC-MS analysis.

We carried out the GC-MS analysis on a Finnigan 4023 quadrupole mass spectrometer (EI mode at 35 eV), using a 30 m \times 0.25 mm DB-5 (0.25 μ m) column (J&W Scientific, Inc., Rancho Cordova, CA) and helium carrier gas at about 35 cm/s. The temperature program was 120°C, hold 1 min, increase 20°C/min to 210°C, 5°C/min to 270°C and 4.5°C/min to 300°C. Selected ions monitored were *m/z* 304, 306, and 308 summed for 2,3,7,8-TCDF; *m/z* 316, 318 and 320 summed for [¹³C₁₂]2,3,7,8-TCDF; *m/z* 320, 322, 324 and 326 summed for [³H]2,3,7,8-TCDD; and *m/z* 332, 334, and 336 summed for [¹³C₁₂]2,3,7,8-TCDD. We calibrated the internal standard solutions by preparing calibration mixtures of these standards with quantitative standards of native 2,3,7,8-TCDD and 2,3,7,8-TCDF prepared at the NFCRC and 2,3,7,8-TCDD solution as a U.S. Environmental Protection Agency (EPA) quality assurance material (Ref. No. 20603; EPA, Las Vegas, NV). We assumed equal integrated GC-MS responses for the molecular ions of native and [³H]2,3,7,8-TCDD. The level of tritiation of the [³H]2,3,7,8-TCDD computed from the molecular ion abundances measured by GC-MS gave a mole fraction of tritium of 27.3% and a specific activity of 2.15 \times 10⁵ dpm/ng. We calculated the specific activity, using the GC-MS-determined concentration and measured activity, to be 2.81 \pm 0.07 \times 10⁵ dpm/ng (triplicate analyses).

Collection of fish for residue analyses

Fish for whole-body TCDD and TCDF residue analyses were collected during the exposure period on days 0 (prior to exposure), 7, 14, 21, and 28, and on day 56 (after 28 d of depuration). When we removed fish from the exposure tanks for residue analyses on day 7, we removed unequal numbers from different tanks to reduce the number of fish remaining in all tanks to 42, and thus reduce the

biomass and avoid potential overloading in the exposure tanks.

Fish for residue analyses were collected randomly from the exposure tanks for each toxicant. Individual weights and lengths were measured for fish collected on day 7 of the exposure and on day 28 of the depuration phase. Fish collected on other sampling days were weighed but not measured for length. All fish were blotted dry before they were weighed and were then wrapped in hexane-rinsed aluminum foil, placed in labeled screw-topped glass vials and stored at -10°C until residue analyses were begun.

GC-MS determinations of TCDD and TCDF in fish

Analyses of fish samples were performed by the method of Smith et al. [19]. The GC-MS conditions and spiking procedures were as described above for the analysis of the water samples.

Sample extracts that required radiometric analysis for [³H]TCDD were rotary-evaporated and brought to 10.0-ml volumes; an appropriate aliquot (usually 1.00 ml) was then taken for scintillation counting. The quench values for the aliquots of the fish extracts were uniformly near the minimum (*S* values of 0.65), as observed for analytical standards. Negative and positive control samples were routinely included in the radiometric determinations of [³H]TCDD and established so that there was no procedural background contribution in these determinations.

The internal standard procedure for GC-MS determinations of both [³H]TCDD and TCDF provided internal quality control for overall accuracy of quantitation. In all reported determinations of these analytes, the criteria attained were relative GC retention time (\pm 1 scan number in 1,160 or \pm 0.001 relative retention units) and correct ion abundances of the three or four molecular ion cluster members (\pm 10% of theoretical value). The limit of quantitation was five times the signal-to-noise ratio and the limit of detection was three times the signal-to-noise ratio. The molecular ion cluster for [³H]TCDD was significantly distorted from that produced by the native populations of ³⁵Cl and ³⁷Cl. Relative ion abundances of *m/z* 320, 324, and 326 were 24, 75, 100 and 70%, respectively. This pattern remained constant throughout the study, indicating no significant exchange of hydrogen for tritium in TCDD during the exposure. This observation also demonstrated no significant background of native 2,3,7,8-TCDD in any of the samples, because the presence of

digital pH meter to measure pH, a Sybron/Barnstead Model pM-70CB conductivity bridge to measure conductivity and a Varian Model 3700 gas chromatograph to measure ammonia. Water chemistry determinations were as follows: hardness, 153 ppm; alkalinity, 88 ppm; pH, 7.7; conductivity, 215 μ ohms; un-ionized ammonia, 0.0013 mg/L; and dissolved oxygen, 65 to 85% saturation.

Analyses of exposure water

During the exposure phase of the study, samples for GC-MS analysis were extracted from the TCDD control and highest exposure concentrations and from all TCDF exposure concentrations on days 0, 7, 14, 21, and 28. On each day immediately following the date of sample collection for GC-MS, we took samples for radiometric TCDD analyses from all exposure chambers. Radiometric analyses of all water extracts were conducted at Battelle Laboratories. Water from replicate A was sampled on days 0, 7 and 21, and water from replicate B on days 1, 14, and 28. On day 7 of the depuration period, the TCDD control and highest concentrations were measured radiometrically, and the TCDF control and highest concentrations were sampled for GC-MS analysis. On day 7 of the depuration phase, only 92 pg/L TCDD was measured in water from the highest TCDD exposure chamber, and 0.56 ng/L TCDF in the highest TCDF exposure chamber. The TCDD and TCDF exposure concentrations measured throughout the exposures are shown in Tables 1 and 2.

Water samples of a volume necessary to provide an adequate amount of analyte were collected from the diluter tanks with solvent-washed glassware and transferred directly to a glass separatory funnel. The water sample was then spiked with the appropriate internal standard solution containing [$^{13}\text{C}_{12}$]2,3,7,8-TCDD and [$^{13}\text{C}_{12}$]2,3,7,8-TCDF at

4.0 pg/ μ l in acetonitrile. The water sample was extracted three times with 50-ml portions of methylene chloride (CH_2Cl_2) and the extracts were passed through a column (about 2 \times 6 cm) of anhydrous, granular sodium sulfate to break emulsions and remove suspended water. The extract was then rotary-evaporated to a low volume and transferred with three or four portions of CH_2Cl_2 to a glass ampoule, blown to dryness with nitrogen and flame-sealed.

The sample was removed from the opened ampoule with four 1.5-ml portions of 20% CH_2Cl_2 in hexane onto a dual column arrangement of 2 \times 0.5 cm 40% H_2SO_4 on silica gel (SA-SG) in the first column and 15 mg Amoco PX-21 activated carbon dispersed in 150-mg glass fibers (CGF) [18]. The efficiency of transfer of [^3H]TCDD from these ampoules in the presence of solid residues was determined to exceed 99%. The SA-SG column was then discarded and the CGF column slightly pressurized to move the sample entirely onto the carbon adsorbent. We applied 15 ml CH_2Cl_2 to the CGF column at about 2 ml/min under pressure, and discarded the eluate.

The analyte, either [^3H]TCDD or TCDF, was recovered from the CGF by back-flushing with 15 ml toluene. The toluene was removed by rotary evaporation in a waterbath at 65 to 70°C under a 9.8-cm vacuum (sample taken just to dryness).

At this point, we added 2-(4-biphenyl)-6-phenylbenzoxazole (PBBO) to perform radiometric analyses on each sample or aliquots thereof containing [^3H]TCDD. The quench curve for counting efficiency was determined by the sealed tritium standard (HAV3612), corrected for decay, as the reference point, and replicate analyses of samples of [^3H]TCDD at various quench values. We used the equation, $\text{dpm} = \text{cpm}/0.85 \times S$, where dpm is disintegrations per minute, cpm is counts per minute and S is the quench value.

Table 2. Concentration (ng/L) of 2,3,7,8-tetrachlorodibenzofuran (TCDF) as measured by GC-MS in exposure water during a 28-d chronic toxicity study with rainbow trout

Day	TCDF nominal concentration (ng/L)					
	0	1.3	2.7	5.3	10.6	21.3
1	0.02	0.38	0.70	1.40	3.20	6.60
7	<0.06	0.33	0.91	1.98	3.84	9.04
14	<0.029	0.44	0.86	1.56	3.82	7.97
21	<0.025	0.37	0.93	1.93	4.19	10.4
28	0.017	0.52	1.10	2.10	4.60	9.9
$\bar{x} \pm \text{SD}$	<0.02	0.41 \pm 0.07	0.90 \pm 0.14	1.79 \pm 0.30	3.93 \pm 0.52	8.78 \pm 1.53

15 liters of water. Over the course of the study the diluter cycle rate varied between 2.4 and 3.0 cycles per hour; the replacement volume was 500 ml per replicate tank per cycle. The approximate water turnover rate in the exposure tanks was 2.4 times per day. The maximum fish loading in each test tank throughout the study was about 1.3 g/L and the maximum fish loading was 0.5 g/L of water passing through the tank in 24 h. Excess food and fecal matter were removed daily. Daily records of diluter operations were maintained throughout the studies. Nominal exposure concentrations (ng/L) were 0 (control), 0.115, 0.231, 0.463, 0.925, and 1.85 for TCDD; and 0 (control), 1.3, 2.7, 5.3, 10.6, and 21.3 for TCDF. Water temperature in the exposure tanks was maintained at $12 \pm 1^\circ\text{C}$.

The combined effluents from the diluter system were recycled through two columns containing activated charcoal to remove TCDD and TCDF from solution. GC-MS and radiometric analyses were used to monitor the effluent for TCDD and TCDF.

Toxicants

Monsanto Company (St. Louis, MO) supplied the TCDD and TCDF used in the studies. The [^3H]TCDD (99+ % pure; 22% unlabeled, 42% monotrinitiated and 36% ditritiated) used had a specific activity of 2.81×10^4 dpm/ng (0.128 $\mu\text{Ci}/\text{ng}$) as determined by radiometric and GC-MS analyses. The TCDF provided by Monsanto was orig-

inally obtained from KOR, Inc. (Cambridge, MA), and was 98+ % pure as determined by GC-MS.

Preparation of stock solutions

All glassware used to prepare stock solutions was rinsed several times with reagent-grade solvents. Carrier solvent for the compounds was acetone (Baker-analyzed). The [^3H]TCDD was diluted with acetone to a concentration of 36 ng/L. The stock solution was analyzed by GC-MS and by liquid scintillation radiometric analysis. Toxicants were delivered by an automatic pipetting system (Micromedic) that provided 0.05 ml/L or less of acetone to each exposure concentration. The TCDF was diluted with acetone to a measured concentration of 407 ng/L. This stock solution was used throughout the study and was delivered to exposure tanks by Micromedic pipetting systems. The acetone concentration delivered to each tank was 0.05 ml/L or less.

Water chemistry

In an effort to reduce the number of instruments coming in contact with the toxicants, we performed routine water chemistry only on the control chambers of both compounds, and only once during the exposure phase and once during the depuration phase. Alkalinity was measured by potentiometric titration with 0.02 N H_2SO_4 to pH 4.5, and hardness was titrated with EDTA according to standard methods [17]. We used an Orion

Table 1. Concentration of 2,3,7,8-tetrachlorodibenzodioxin (TCDD) in exposure water as measured by radiometric and GC-MS analyses

Day	Measurement	TCDD nominal concentration (pg/L)					
		0	115	231	463	925	1,850
1	pg/L (^3H) ^a	1.2	31	62	130	280	527
	pg/L (GC-MS)	— ^b	—	—	—	—	—
7	pg/L (^3H) ^a	1.4	41	78	169	359	705
	pg/L (GC-MS)	<25 ^c	—	—	—	—	840
14	pg/L (^3H) ^a	1.1	34	69	146	298	606
	pg/L (GC-MS)	<15 ^c	—	—	—	—	730
21	dpm/L (^3H) ^a	0.7	41	87	200	466	970
	pg/L (GC-MS)	<15 ^c	—	—	—	—	1,220
28	pg/L (^3H) ^a	1.3	44	99	234	507	1,135
	pg/L (GC-MS)	<20 ^c	—	—	—	—	1,400
	\bar{x} pg/L (^3H) \pm sd	1.1	38 \pm 5	79 \pm 15	176 \pm 42	382 \pm 101	789 \pm 256
	\bar{x} pg/L (GC-MS) \pm sd	<15 ^c	—	—	—	—	1,048 \pm 315

^aMeasured by radiometric analyses for [^3H]TCDD. Conversion of dpm/L to pg/L (^3H) based on specific activity of 2.81×10^4 dpm/ ^3H /ng TCDD.

^bNot determined.

^cNone detected (less than minimal detectable limits).

TCDF are usually higher than those of TCDD. In certain areas of the Great Lakes and the northeastern United States (Newark Bay, Passaic River), TCDD residues in fish and crustaceans exceed the U.S. Food and Drug Administration (FDA) "levels of concern" of 25 pg/g and 50 pg/g, respectively [8,9].

The chronic toxicity and bioconcentration of TCDD and TCDF in aquatic species have not been elucidated. Helder [10,11] reported that exposing fertilized eggs of rainbow trout (*Salmo gairdneri*) for 96 h to TCDD concentrations of 0.1 ng/L significantly decreased the growth of the resulting fry, and that exposing rainbow trout fry for 96 h to 10 and 100 ng/L TCDD retarded growth, caused histological changes in tissues and delayed mortality. Miller et al. [12] reported the toxicity and pathologic changes induced by short-term exposures of guppies (*Poecilia reticulata*) and coho salmon (*Oncorhynchus kisutch*) to TCDD. Coho salmon exposed to 56 pg/L and 1,000 ng/L for 24 h exhibited delayed mortality. Cooper et al. [13] observed delayed development and decreased survival in Japanese medaka (*Oryzias latipes*) exposed to TCDD concentrations of 6 to 500 ng/L. The oral toxicity and metabolism of TCDD in rainbow trout and yellow perch (*Perca flavescens*) were recently reported by Kleeman et al. [14,15]. In rainbow trout exposed for 6 h to 107 ng/L TCDD, followed by a 139-d depuration period, Branson et al. [16] estimated the bioconcentration factor (BCF) to be 9,270 and the elimination half-life to be 58 d. Significant delayed effects were similar to those reported by Miller et al. [12]. No similar studies have been conducted to characterize the toxicity and bioconcentration of TCDF in aquatic species.

Because of the lack of chronic toxicity data involving continuous low-level exposures of fish to TCDD and TCDF, we attempted to measure the chronic toxicity of these two compounds to rainbow trout. Their effects on survival, growth, and behavior were evaluated during a 28-d continuous exposure followed by a 28-d depuration phase. Uptake and depuration kinetics and BCFs for TCDD and TCDF were also evaluated.

METHODS

Test organisms

Eyed eggs of rainbow trout obtained from the Erwin (Tennessee) National Fish Hatchery came from two-year-old spawners of the "Fish Lake" strain; they were transferred to the National Fisheries Contaminant Research Center (NFCRC), Co-

lumbia, Missouri, where they hatched on 11 April 1985. About 2,000 swim-up fry produced from the eggs were shipped by air to Battelle Laboratories, Columbus, Ohio, on 2 May 1985. Mortality associated with shipping was less than 5%.

The fish were maintained in reconstituted water in 1,200-liter fiberglass tanks until the study was begun. The fish were held at a temperature of 11°C ($\pm 1^\circ\text{C}$), and were fed Tetramin floating flake food ad libitum. Analysis of the food showed no detectable quantities of TCDD (detection limit, less than 0.06 ng/g), TCDF (detection limit, less than 0.04 ng/g) or other organochlorine compounds.

Experimental approach

A flow-through diluter was used to continuously expose rainbow trout for 28 d to five duplicated concentrations each of [^3H]TCDD and TCDF plus duplicated controls. After the exposure period, toxicant input to the exposure chambers was terminated and the fish were held in laboratory water under flow-through conditions in the same test chambers during the 28-d depuration period. The fish were fed Tetramin floating flake food ad libitum throughout the study.

Fifty fish (0.38 ± 0.09 g each) were stocked in each aquarium. Samples of fish for residue analyses were taken on days 7, 14, 21, and 28 of the exposure phase and on day 28 of the depuration phase. To determine initial background concentrations of TCDD and TCDF, 30 fry with no previous TCDD and TCDF exposure history were weighed, measured, frozen, and analyzed for TCDD and TCDF. Fish collected for residue analyses were frozen until the time of analysis.

Daily survival records were maintained throughout the study. In addition, we recorded daily observations of swimming behavior, feeding behavior, location and position in the exposure tank, external lesions, and deformities.

Diluter and toxicant exposure system

The diluter system used in the study was constructed at NFCRC and installed in the West Jefferson Environmental Research Laboratory, Battelle Laboratories, Columbus, Ohio. The system consisted of two separate proportional flow-through diluters in a temperature-controlled waterbath. Both the diluter and waterbath were enclosed in a vented Plexiglas structure to reduce environmental exposures resulting from volatilization of the compounds. Each diluter delivered five concentrations (50% dilutions) of each compound (plus water for controls) into duplicate tanks containing

555

TOXICITY AND BIOCONCENTRATION OF 2,3,7,8-TETRACHLORODIBENZODIOXIN AND 2,3,7,8-TETRACHLORODIBENZOFURAN IN RAINBOW TROUT

PAUL M. MEHRLE,* DENNY R. BUCKLER, EDWARD E. LITTLE,
LARRY M. SMITH, JIM D. PETTY, PAUL H. PETERMAN
and DAVID L. STALLING
National Fisheries Contaminant Research Center, U.S. Fish and Wildlife Service,
Columbia, Missouri 65201

G. M. DE GRAEVE and JAMES J. COYLE
Battelle Laboratories—Columbus, Columbus, Ohio 43201

WILLIAM J. ADAMS
Monsanto, St. Louis, Missouri 63167

(Received 25 March 1987; Accepted 14 July 1987)

Abstract—Among the most toxic isomers of polychlorinated dibenzodioxins and polychlorinated dibenzofurans, two groups of toxic aromatic compounds, are 2,3,7,8-tetrachlorodibenzodioxin (TCDD) and 2,3,7,8-tetrachlorodibenzofuran (TCDF). We examined the chronic toxicity of these compounds to rainbow trout (*Salmo gairdneri*). The fish (0.38 ± 0.09 g) were continuously exposed in an intermittent-flow proportional diluter for 28 d to 0, 38, 79, 176, 382, and 789 pg TCDD/L (parts per quadrillion) or to 0, 0.41, 0.90, 1.79, 3.93, and 8.78 ng TCDF/L (parts per trillion); exposures to each chemical were followed by a 28-d depuration phase. TCDD had significant effects on survival, growth, and behavior during the exposure and depuration phases. The no observed effect concentration was lower than the lowest exposure concentration of 38 pg/L. The average measured BCF at 28 days was 26,707. The estimated bioconcentration factor at steady-state equilibrium was 39,000 in the lowest exposure concentration where fish were least affected. TCDF, like TCDD, induced similar effects on survival, growth and behavior. The no observed effect concentration, based on survival, was 1.79 ng/L; that based on growth was 0.41 ng/L. The measured bioconcentration factor was 6,049 in fish exposed to 0.41 ng/L, and 2,455 in fish exposed to 3.93 ng/L for 28 d.

Keywords—Dioxin Furan 2,3,7,8-tetrachlorodibenzodioxin (TCDD) Rainbow trout
2,3,7,8-tetrachlorodibenzofuran (TCDF)

INTRODUCTION

Polychlorinated dibenzofurans (PCDFs) and polychlorinated dibenzo-*p*-dioxins (PCDDs) are two groups of toxic compounds composed of 135 and 75 individual isomers, respectively. Certain of these isomers are extremely toxic, particularly those with chlorine substituents in the 2,3,7,8-positions of the aromatic rings. PCDFs occur as trace contaminants in polychlorinated biphenyls (PCBs) and are sometimes formed in significant quantities from pyrolysis or incomplete combustion of PCBs [1]. Isomer specific PCDFs and PCDDs also occur as contaminants in the manufacture and pyrolysis of certain chlorinated phenols [2]. During combustion of these formulations,

PCDDs are formed primarily from thermal dimerization and conversion of chlorinated phenoxyphe-nols, whereas PCDFs are formed from chlorinated diphenyl ethers. PCDDs and PCDFs have also been found in fly ash of municipal waste incinerators [3].

The isomers 2,3,7,8-tetrachlorodibenzodioxin (TCDD) and 2,3,7,8-tetrachlorodibenzofuran (TCDF) have been reported as contaminants in fish and sediment. Both have been detected in fish from the Great Lakes [4-6], and residues have been found in resident and migratory fish, crustaceans and sediment in the Chesapeake Bay area [7] and in industrialized and heavily populated areas of the northeastern United States [8]. The concentrations of these compounds in fish vary widely from low pg/g to ng/g quantities, and those of

*To whom correspondence may be addressed.

CONGENER DEPENDENT BIOAVAILABILITY OF PCDDs AND PCDFs IN FLY ASH AND SEDIMENT

COMPOUND	FLY ASH PG/G CARBON	FISH PG/G LIPID	BI	NORMALIZED BI	SEDIMENT PG/G CARBON	FISH PG/G LIPID	BI	NORMALIZED BI
2,3,7,8-TCDD	1.3×10^5	93	7.4×10^{-4}	1.00	5450	1500	.27	1.00
2,3,4,8-TCDF	1.7×10^5	95	5.7×10^{-4}	.77	5870	300	.06	.22
1,2,3,7,8-PECDD	1.2×10^6	540	4.3×10^{-4}	.58	1000	60	.06	.22
2,3,4,7,8-PECDF	7.3×10^5	180	2.5×10^{-4}	.34	190	55	.28	1.00
1,2,3,6,7,8-; 1,2,3,4,7,8-H _x CDD	5.0×10^6	1300	2.6×10^{-4}	.35	5800	200	.04	.13
1,2,3,6,7,8-H _x CDF	8.2×10^5	290	3.5×10^{-4}	.47	360	200 12	.04	.14
1,2,3,4,6,7,8-H _p CDD	1.6×10^7	1300	7.8×10^{-5}	.11	71000	540	.005	.018
1,2,3,4,6,7,8-H _p CDF	3.7×10^6	340	9.2×10^{-5}	.12	9400	31	.003	.012

not be reached. Kinetic models and appropriate rate constants are needed to accurately predict fish bioaccumulation levels. When an aquatic ecosystem has a constant input of TCDD so that surface sediment concentrations are relatively constant, fish concentrations will approach a steady-state level dependent on rates of uptake from water, food and contact with sediment. For Lake Ontario we are investigating sediment to fish TCDD ratios under present conditions so that remedial actions for Superfund sites and other sources of TCDD can be evaluated with respect to changes in fish residues which will result in the future. That is, if sediment TCDD levels are decreased or increased in the future through man's activities, we should be able to predict eventual changes in fish contamination levels when a new "approach to steady-state" system results. In Lake Ontario our preliminary data indicates that fish lipids have only about 5% of the TCDD concentration found in the organic carbon fraction of the surface sediments. An extensive survey of sediment and fish TCDD levels throughout Lake Ontario is scheduled for this summer.

[The following text is extremely faint and appears to be bleed-through from the reverse side of the page. It is largely illegible.]

... of the ...
 ...
 ...
 ...
 ...
 ...
 ...
 ...
 ...
 ...
 ...
 ...

[Handwritten mark, possibly initials 'AT']

demonstrates how this same effect occurs for laboratory exposure of fish to municipal incinerator fly ash. The effect is more extreme when the "food chain chromatography" effect is present and longer exposure times are involved (much longer time required to reach steady state) as with the fish exposed to sediment in a reservoir. The compounds included in the table are all members of the "biosignificant fraction of PCDDs and PCDFs in that they do appear to bioaccumulate, are all 2,3,7,8-substituted and thus all have significant toxic potential. We developed a simple expression called the "bioavailability index" (BI) for comparing relative bioaccumulation tendencies for different chemicals associated with different solid wastes on sediments. The BI is simply the ratio of chemicals accumulated per gram of fish lipid to the amount present per gram of organic carbon in the solid material the fish are exposed to. The BI can be normalized to a value of 1.0 for 2,3,7,8-TCDD in order to make comparison of the other PCDD and PCDF congeners BIs easier. Although the magnitudes of the fly ash and sediment BIs cannot be directly compared due to great differences in the fish exposures, the normalized BIs for both fly ash and sediment show the same trends. For both PCDDs and PCDFs the normalized BIs decrease as the degree of chlorination increases. There also appears to be a tendency for 2,3,7,8-TCDF to be less bioaccumulable than 2,3,7,8-TCDD. The penta-CDD and -CDF results for the sediment seem divergent and will be rechecked before this data is published in this form. We will soon have much more of this kind of data when results are obtained for Lake Ontario sediments and paper mill sludges.

EPA is frequently faced with the question of what fish TCDD contamination levels will result from known or projected environmental contamination levels. The use of a BCF value, no matter how accurate, for predicting fish residues has a major limitation in that environmental TCDD water concentrations can never be detected even with the most sensitive techniques. Even if water measurements could be made, it would be difficult to determine what fraction of TCDD in water is not associated with dissolved or particulate organic carbon so that a laboratory derived BCF could be applied. An alternative approach is to use expected equilibrium partitioning relationships for sediment and fish to predict maximum levels of fish contamination and rely on site-specific sediment to fish TCDD ratios to determine more realistic "approach-to-steady-state" relationships likely to exist between sediments and fish. This should be done on the basis of partitioning between organic carbon in sediment and lipid in fish. In theory there should be a simple 1:1 equilibrium relationship between sediment organic carbon and lipid concentrations for very hydrophobic organic compounds such as 2,3,7,8-TCDD which are very slowly metabolized and eliminated from the organism. There are data for compounds such as PCBs which indicate approximately a four-fold preference of these compounds for lipids over organic carbon in sediment. Our 2,3,7,8-TCDD BI value of .27 for sediment is 4X less than the theoretical partitioning value of 1.0 and ~~4~~ less than the lipid preference value of 4.0 at least in part because steady-state conditions were not reached when the fish were exposed to the sediment.

In many environmental situations expected steady-state relationships between fish bioaccumulation levels and sediment contamination levels will

6. The Water Quality Criteria Document BCF value for 2,3,7,8-TCDD is very low because previously reported BCF determinations were made on the basis of very short exposure periods, inadequate depuration data, static exposure conditions, overestimates of water exposure concentrations, and other factors which lower the estimate of equilibrium fish concentrations with respect to actual water concentrations.
7. 2,3,7,8-TCDD is so toxic to fish that BCF determinations have not yet been made over long exposure periods without toxic effects and mortality occurring. No-effect levels are likely to be less than 10 ppq total 2,3,7,8-TCDD in water and possibly less than 1 ppq if only "dissolved" 2,3,7,8-TCDD is considered in the bioaccumulatable and toxic component.
8. 2,3,7,8-TCDD was lethal to carp at an accumulated dose of 2 ug/Kg. Rainbow trout appear to be a little more sensitive. This toxicity is comparable to the 1 ug/Kg LD50 found for the guinea pig, the most sensitive mammalian species known. Fathead minnows appear to be at least five times less sensitive than carp or rainbow trout.

It is likely that fish bioaccumulation of PCDDs and PCDFs is greatly influenced by food chain links to contaminated sediments and contact time of fish with sediment. Field monitoring data generally supports this premise. For example, fish collected from field surveys when analyzed for all TCDD isomers generally only have detectable amounts of 2,3,7,8-TCDD despite the presence of greater amounts of other TCDD isomers in contaminated sediments. Many of the TCDD isomers have relatively low bioaccumulation potential as seen from our BCF measurements for 1,2,3,4-TCDD and 1,3,7,9-TCDD and thus are not likely to be detected. 1,3,6,8-TCDD, however, would be expected in the fish in detectable levels if uptake from water was the major route for bioaccumulation. The lack of 1,3,6,8-TCDD in the fish is consistent with a kinetic effect involving decreasing amounts of 1,3,6,8-TCDD with respect to 2,3,7,8-TCDD in each step along the food chain to a fish and the absence of significant uptake from water.

For higher chlorinated PCDD and PCDF congeners, differences in elimination rates from fish and their food chain organisms create similar preferential bioaccumulation of 2,3,7,8-substituted planar molecules which are likely to be metabolized at a slower rate. In addition, as molecular weight and size increase with increasing degree of chlorination, it is apparent that the rate uptake from water across the gills decreases. Absorption efficiency from ingested material is also probably less for higher chlorinated congeners.

The net result of the above considerations is that many PCDDs and PCDFs found in sediments are not detectable in fish. The attached table on "Congener Dependent Bioavailability of PCDDs and PCDFs"

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE

4 February 1987

SUBJECT

2,3,7,8-TCDD in Aquatic Environments

FROM

Philip M. Cook, Ph.D. *PMC*
 Chief, Hazardous Waste Research Branch, ERL-Duluth

TO

Jim Cummings
 Office of the Assistant Administrator
 for Solid Waste and Emergency Response

This memorandum is provided in response to your request for an update on the state of knowledge concerning 2,3,7,8-TCDD in aquatic environments. A considerable amount of new information is being generated and much will be reported during 1987. Most of the information I can provide results from our own research. I believe you have already received reprints for research results already published.

I reported bioconcentration factor (BCF) determinations for 2,3,7,8-TCDD, 1,2,3,4-TCDD, 1,3,6,8-TCDD and 1,3,7,9-TCDD at the Society for Environmental Toxicology and Chemistry meeting last November. A journal publication is in preparation. The EPA Water Quality Criteria Document presently uses a value of 5000 for the 2,3,7,8-TCDD BCF. We determined a value of 66,000 for carp and 97,000 and 159,000 for fathead minnows at two different exposure concentrations. Our BCF data for the four TCDD isomers is summarized in the attached table. We concluded from this study that ---

1. BCFs for different TCDD isomers vary greatly as expected from field monitoring data.
2. TCDD isomers other than 2,3,7,8-TCDD have lower BCFs than predicted on the basis of structure or log Kow due to more rapid rates of elimination.
3. Differences in rates of metabolism probably explain differences in TCDD rates of elimination and thus BCFs.
4. The gill uptake efficiencies for the four TCDD isomers studied appear to be similar despite structural differences and different uptake rate measurements attributed to large differences in elimination rates.
5. Approximately 90% of the TCDD in the fish exposure water was associated with particulate and dissolved organic matter. Thus, BCFs calculated on the basis of organic carbon free TCDD in the water would be ten times greater.

J

TCDD, we found no increases above expected levels. Soft-tissue sarcoma was an exception; a ninefold increase was found among workers who were exposed for 1 year or more and who had at least 20 years of latency. Interpretation of the increased SMR is limited, however, by the small number of cases and because this cause of death was sometimes misclassified on the death certificates of the workers and in the national comparison population. Continued surveillance of the cohort may provide a firmer estimate of risk.

Mortality from all cancers combined was 15 percent higher than expected in the overall cohort. The subcohort with 1 year or more of exposure and 20 years or more of latency had a 46 percent increase in all cancers combined and a 42 percent increase in cancers of the respiratory tract. Although the study could not completely exclude the possible contribution of other occupational carcinogens or smoking, the increased mortality, especially in the subcohort with one year or more of exposure, is consistent with the status of TCDD as a carcinogen.

We are indebted to the National Institute for Occupational Safety and Health statistical clerks, Steve Green, Joyce Godfrey, and others, for their technical contributions; to representatives of the companies and unions for assistance in gathering the data for the study; to our colleagues at the Center for Environmental Health and Injury Control, Centers for Disease Control, for analysis of the serum samples; and to Lawrence Fine, David Brown, and the members of our blue-ribbon review panel for their helpful advice.

REFERENCES

- Hardell L, Sandstrom A. Case-control study; soft-tissue sarcomas and exposure to phenoxyacetic acids or chlorophenols. *Br J Cancer* 1979; 39:711-7.
- Eriksson M, Hardell L, Adami HO. Exposure to dioxins as a risk factor for soft tissue sarcoma: a population-based case-control study. *J Natl Cancer Inst* 1990; 82:486-90.
- Eriksson M, Hardell L, Berg N, Moller T, Axelson O. Soft-tissue sarcomas and exposure to chemical substances: a case-referent study. *Br J Ind Med* 1981; 38:27-33.
- Hardell L, Eriksson M. The association between soft tissue sarcomas and exposure to phenoxyacetic acids: a new case-referent study. *Cancer* 1988; 62:652-6.
- Hardell L, Bengtsson NO. Epidemiologic study of socioeconomic factors and clinical findings in Hodgkin's disease, and reanalysis of previous data regarding chemical exposure. *Br J Cancer* 1983; 48:217-25.
- Hardell L, Eriksson M, Lerner P, Lundgren E. Malignant lymphoma and exposure to chemicals, especially organic solvents, chlorophenols and phenoxy acids: a case-control study. *Br J Cancer* 1981; 43:169-76.
- Woods JS, Polissar L, Severson RK, Heuser LS, Kulander BG. Soft tissue sarcoma and non-Hodgkin's lymphoma in relation to phenoxyherbicide and chlorinated phenol exposure in western Washington. *J Natl Cancer Inst* 1987; 78:899-910.
- Persson B, Dahlander A, Fredriksson M, Brage HN, Ohlson CG, Axelson O. Malignant lymphomas and occupational exposures. *Br J Ind Med* 1989; 46:516-20.
- Axelson O, Sundell L, Andersson K, Edling C, Hogstedt C, Kling H. Herbicide exposure and tumor mortality: an updated epidemiologic investigation on Swedish railroad car workers. *Scand J Work Environ Health* 1980; 6:73-9.
- Thiess AM, Frentzel-Beyme R, Link R. Mortality study of persons exposed to dioxin in a trichlorophenol-process accident that occurred in the BASF AG on November 17, 1953. *Am J Ind Med* 1982; 3:179-89.
- Hardell L, Johansson B, Axelson O. Epidemiological study of nasal and nasopharyngeal cancer and their relation to phenoxy acid or chlorophenol exposure. *Am J Ind Med* 1982; 3:247-57.
- Kociba R, Keyes D, Beyer J, et al. Results of a two-year chronic toxicity and oncogenicity study of 2,3,7,8-tetrachlorodibenzo-p-dioxin in rats. *Toxicol Appl Pharmacol* 1978; 46:279-303.
- National Toxicology Program (NTP). Carcinogenesis bioassay of 2,3,7,8-tetrachlorodibenzo-p-dioxin (CAS No. 1746-01-6) in Osborne-Mendel rats and B6C3F1 mice (gavage study) 1982. Washington, D.C.: Government Printing Office, 1982. (DHHS publication no. (NIH) 82-1765.)
- Smith AH, Pearce NE, Fisher DO, Giles HJ, Teague CA, Howard JK. Soft tissue sarcoma and exposure to phenoxyherbicides and chlorophenols in New Zealand. *J Natl Cancer Inst* 1984; 73:1111-7.
- Wiklund K, Holm L. Soft tissue sarcoma risk in Swedish agricultural and forestry workers. *J Natl Cancer Inst* 1986; 76:229-34.
- Pearce NE, Sheppard RA, Smith AH, Teague CA. Non-Hodgkin's lymphoma and farming: an expanded case-control study. *Int J Cancer* 1987; 39:155-61.
- Wiklund K, Dich J, Holm LE. Risk of malignant lymphoma in Swedish pesticide applicators. *Br J Cancer* 1987; 56:505-8.
- Olsen JH, Jensen OM. Nasal cancer and chlorophenols. *Lancet* 1984; 2:47-8.
- Hardell L, Bengtsson N, Jonsson V, Eriksson S, Larsson L. Aetiological aspects on primary liver cancer with special regard to alcohol, organic solvents and acute intermittent porphyria — an epidemiological investigation. *Br J Cancer* 1984; 50:389-97.
- Rao MS, Subbarao V, Prasad JD, Scarpelli DG. Carcinogenicity of 2,3,7,8-tetrachlorodibenzo-p-dioxin in the Syrian golden hamster. *Carcinogenesis* 1988; 9:1677-9.
- Poland A, Palen D, Glover E. Tumour promotion by TCDD in skin of HRS/J hairless mice. *Nature* 1982; 300:271-3.
- Pitot HC, Goldsworthy T, Campbell HA, Poland A. Quantitative evaluation of the promotion by 2,3,7,8-tetrachlorodibenzo-p-dioxin of hepatocarcinogenesis from diethylnitrosamine. *Cancer Res* 1980; 40:3616-20.
- Esposito M, Tiernan T, Dryden F. Dioxins. 1980. Cincinnati: Industrial Environmental Research Laboratory, 1980. (EPA publication 600/2-80-197.)
- Suskind RR, Hertzberg VS. Human health effects of 2,4,5-T and its toxic contaminants. *JAMA* 1984; 251:2372-80.
- Fingerhut M, Halperin W, Marlow D, et al. Mortality among U.S. workers employed in the production of chemicals contaminated with 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). NIOSH Final Report PB91125971. Springfield, Va.: National Technical Information Service, 1990.
- Sweeney MH, Fingerhut MA, Connally LB, et al. Progress of the NIOSH cross-sectional medical study of workers occupationally exposed to chemicals contaminated with 2,3,7,8-TCDD. *Chemosphere* 1989; 19:973-7.
- World Health Organization. International classification of diseases: manual of the international statistical classification of diseases, injuries, and causes of death. Geneva: World Health Organization, 1977.
- Steenland K, Beaumont J, Spaeth S, et al. New developments in the NIOSH lifetable analysis system. *J Occup Med* 1990; 32:1091-8.
- Rothman K, Boice J. Epidemiologic analysis with a programmable calculator. Washington, D.C.: Government Printing Office, 1979:30-1. (DHEW publication no. (NIH) 79-1649.)
- Rothman KJ. *Modern epidemiology*. Boston: Little, Brown, 1986:229, 338-9.
- Fox AJ, Collier PF. Low mortality rates in industrial cohort studies due to selection for work and survival in the industry. *Br J Prev Soc Med* 1976; 30:225-30.
- Suit HD. Sarcoma of soft tissue. *CA* 1978; 28:284-95.
- Fingerhut MA, Halperin WE, Honchar PA, Smith AB, Groth DH, Russell WO. An evaluation of reports of dioxin exposure and soft tissue sarcoma pathology among chemical workers in the United States. *Scand J Work Environ Health* 1984; 10:299-303.
- Patterson DG Jr, Fingerhut MA, Roberts DR, et al. Levels of polychlorinated dibenzo-p-dioxins and dibenzofurans in workers exposed to 2,3,7,8-tetrachlorodibenzo-p-dioxin. *Am J Ind Med* 1989; 16:135-46.
- Percy C, Stanek E III, Gloekler L. Accuracy of cancer death certificates and its effect on cancer mortality statistics. *Am J Public Health* 1981; 71:242-50.
- Siemiatycki J, Wacholder S, Dewar R, Cardis E, Greenwood C, Richardson L. Degree of confounding bias related to smoking, ethnic group, and socioeconomic status in estimates of the association between occupation and cancer. *J Occup Med* 1988; 30:617-25.
- Axelson O. Aspects on confounding in occupational health epidemiology. *Scand J Work Environ Health* 1978; 4:98-102.
- Steenland K, Beaumont J, Halperin W. Methods of control for smoking in occupational cohort mortality studies. *Scand J Work Environ Health* 1984; 10:143-9.
- Zober A, Messerer P, Huber P. Thirty-four-year mortality follow-up of BASF employees exposed to 2,3,7,8-TCDD after the 1953 accident. *Int Arch Occup Environ Health* 1990; 62:139-57.
- Zack JA, Suskind R. The mortality experience of workers exposed to tetrachlorodibenzodioxin in a trichlorophenol process accident. *J Occup Med* 1980; 22:11-4.
- Zack JA, Gaffey WR. A mortality study of workers employed at the Monsanto Company plant in Nitro, West Virginia. *Environ Sci Res* 1983; 26:575-91.
- Ott MG, Olson RA, Cook RR, Bond GG. Cohort mortality study of chemical workers with potential exposure to the higher chlorinated dioxins. *J Occup Med* 1987; 29:422-9.
- Monson RA. *Occupational epidemiology*. Boca Raton, Fla.: CRC Press, 1990:100.

Table 5. Mortality from All Cancers and from Cancers of the Trachea, Bronchus, and Lung, According to Latency Period and Duration of Employment at the Study Plants.*

CAUSE/LATENCY PERIOD	DURATION OF EMPLOYMENT (YR)														OVERALL	TEST FOR TREND	
	<5		5 TO <10		10 TO <15		15 TO <20		20 TO <25		25 TO <30		≥30				
	deaths observed	SMR	deaths observed	SMR	deaths observed	SMR	deaths observed	SMR	deaths observed	SMR	deaths observed	SMR	deaths observed	SMR			
All cancers																	
<10 Yr	10	85	1	18	0	0	0	0	0	0	0	0	0	0	11	64	
10 to <20 Yr	21	114	5	126	12	103	8	80	0	0	0	0	0	0	46	105	
≥20 Yr	40	138	15	140	6	70	15	98	34	134	31	116	54	135†	195	125†	
Total	71	120	21	104	18	89	23	91	34	134	31	116	54	135†	252	116	
SRR		100		99		61		76		128		84		115			0.9
Trachea, bronchus, and lung																	
<10 Yr	3	103	1	74	0	0	0	0	0	0	0	0	0	0	4	94	
10 to <20 Yr	5	82	0	0	5	139	4	122	0	0	0	0	0	0	14	98	
≥20 Yr	11	102	2	51	2	65	3	55	12	133	18	180†	19	126	67	117	
Total	19	96	3	46	7	105	7	81	12	133	18	180†	19	126	85	112	
SRR		100		65		91		89		171		147		98			0.6

*Excludes 202 workers for whom the duration of assignment to processes involving TCDD contamination was not available from work records. SRR denotes standardized rate ratio.

†P<0.05.

‡P<0.01.

hort; mortality from nonmalignant respiratory disease (ICD codes 470 to 478 and 490 to 519), which is often associated with smoking, was lower than expected (15 deaths; SMR, 96; 95 percent confidence interval, 54 to 158). Second, in the exposed population with 20 years of latency, whose members presumably shared similar smoking habits, the increase was confined to the high-exposure subcohort. Third, on the basis of empirical evidence from other studies, Siemiatycki et al.³⁶ have shown that between a blue-collar population and the general U.S. population, confounding by smoking is unlikely to account for an excess risk of more than 10 to 20 percent. Finally, a limited adjustment in the risk of lung cancer,^{37,38} based on the smoking prevalence of surviving workers at only two plants, did not substantially change our results.²⁵ Although confounding by smoking is unlikely to explain the higher rate of respiratory cancer in the high-exposure subcohort, it remains possible that the increase was due to confounding by occupational exposures other than TCDD. For example, asbestos may have contributed to mortality from lung cancer in the cohort, since two deaths were due to mesotheliomas.

An unexpected finding was the small but significant increase in mortality from all cancers combined. The observed increase is consistent with a carcinogenic effect of TCDD. For all cancers combined, mortality was significantly higher than expected in the entire cohort, more pronounced in the high-exposure subcohort, and increased at 9 of 12 plants. With mortality from cancers of the trachea, bronchus, and lung excluded, mortality from all remaining cancers combined was still higher than expected in the overall cohort (SMR, 117; 95 percent confidence interval, 100 to 136) and in the high-exposure subcohort (SMR, 150; 95 percent confidence interval, 118 to 189). Consequently, the increased risk for all cancers combined is not explained by smoking or by increased mortality due to cancer of the trachea, bronchus, and lung. The generation of tumors in a number of organs in animals

exposed to TCDD^{12,13} and the demonstration that TCDD promoted tumors in two organs^{21,22} make it biologically plausible that TCDD may produce tumors in more than one organ in humans. Moreover, a significantly increased SMR for all cancers combined is unusual in occupational studies of chemical workers. Results similar to ours were observed in a study of German workers exposed to TCDD after a 2,4,5-trichlorophenol reactor accident in 1953. A subgroup of workers with chloracne (used as a surrogate for exposure) and at least 20 years of latency had an SMR of 201 (90 percent confidence interval, 122 to 315) for all cancers combined, based on 14 deaths.³⁹ This is the only other industrial cohort with both substantial exposure to TCDD and a long period of latency during which mortality was examined. Workers from U.S. production cohorts described in previous studies were included in the current study if they met our entry criteria.⁴⁰⁻⁴²

Two observations argue against a carcinogenic effect of TCDD. First, there was not a significant linear trend of increasing mortality with increasing duration of exposure to products contaminated with TCDD (Table 4). However, our use of duration of exposure may have misclassified the cumulative dose of some workers. In addition, a dose-response relation is generally viewed as strong evidence for an association when it is present, but as fairly weak evidence against an association when it is absent.⁴³ Second, our study did not directly assess the effect of exposure to TCDD alone. The workers were exposed concurrently to the chlorophenols and phenoxy herbicides that were contaminated with TCDD. In addition, they may have been exposed to numerous other chemicals while employed at the plants.

Because the exposure of our cohort was substantially higher than that of most nonoccupational populations, the estimates of effect in this study may provide an upper level of risk to be anticipated in humans. For several types of cancer previously associated with

Table 4. Mortality from All Cancers and from Cancers of the Trachea, Bronchus, and Lung, According to Latency Period and Duration of Exposure to Processes Involving TCDD Contamination.*

CAUSE/LATENCY PERIOD	DURATION OF EXPOSURE (YR)										TEST FOR TREND
	<1		1 TO <5		5 TO <15		≥15		OVERALL		
	deaths observed	SMR	deaths observed	SMR	deaths observed	SMR	deaths observed	SMR	deaths observed	SMR	
All cancers											
<10 Yr	10	68	8	71	3	71	0	0	21	70	
10 to <20 Yr	28	109	16	87	18	122	7	340†	69	113	
≥20 Yr	48	102	59	165‡	37	138	18	115	162	129‡	
Total	86	98	83	127†	58	126	25	141	252	116†	
SRR		100		127		123		129			0.3
Trachea, bronchus, and lung											
<10 Yr	3	77	3	95	1	79	0	0	7	84	
10 to <20 Yr	6	69	5	79	9	180	1	137	21	101	
≥20 Yr	17	96	17	126	14	146	9	156	57	123	
Total	26	86	25	109	24	151	10	154	85	112	
SRR		100		109		166		136			0.2

*Excludes 202 workers for whom the duration of assignment to processes involving TCDD contamination was not available from work records. The number of observed deaths and the SMRs therefore differ slightly from those in Table 2. SRR denotes standardized rate ratio.

†P<0.05.

‡P<0.01.

a priori interest were too small to permit meaningful analyses according to duration. For all cancers combined and for cancers of the trachea, bronchus, and lung, Table 4 shows the distribution of mortality with increasing duration of exposure to products contaminated with TCDD. The standardized rate ratios were increased in the strata of longer duration for both these categories, but significant linear trends were not found. Mortality increased with increasing latency for both these categories of cancer. Table 5 shows the distribution of mortality for the same categories with increasing duration of employment. Significant linear trends were not observed for either category with increasing length of employment, although standardized rate ratios were higher than expected in several strata of employment ≥ 20 years. Mortality increased with increasing latency for both categories of cancer.

Serum Levels of TCDD

The mean serum TCDD level, as adjusted for lipids, in the sample of 253 workers from two plants was 233 pg per gram of lipid (range, 2 to 3400) (Fig. 1). A mean level of 7 pg per gram was found in the comparison group of 79 unexposed persons, all of whose levels were under 20, a range found in other unexposed populations.³⁴ The mean for 119 workers with one year or more of exposure was 418 pg per gram. All the workers had received their last occupational exposures 15 to 37 years earlier.

DISCUSSION

TCDD, widely known as dioxin, has acquired the reputation of a potent carcinogen. Our study, although limited in its ability to detect increased numbers of rare cancers, found little increase in mortality from the cancers associated with TCDD in previous studies in humans. The exception was an increase in soft-tissue sarcoma. The difficulties of evaluating soft-tissue sarcomas in a cohort study of mortality have been described.³³ These include variability in patho-

logical diagnosis and misclassification on death certificates. Consequently, the interpretation of the increased mortality from soft-tissue sarcoma in our study is limited by the small number of cases and the fact that the cause of death was sometimes misclassified on the death certificates of the workers (Table 3) and in the U.S. comparison population.³⁵

Several case-control studies have found significant fourfold increases in non-Hodgkin's lymphoma in persons reporting exposure to phenoxy herbicides or chlorophenols, some of which contained TCDD.^{6,8} The magnitude of the increase in mortality in the cohort described here (SMR, 137; 95 percent confidence interval, 66 to 254) suggests a smaller increase in this risk, or no increase at all. Mortality was not significantly higher than expected for other cancers of a priori interest—liver and stomach cancers and Hodgkin's disease. No deaths from nasal cancer were observed. The inconsistency between the results reported here and those of earlier epidemiologic studies is accentuated by the longer and probably greater exposure of this cohort to phenoxy herbicides and chlorophenols contaminated with TCDD.

Mortality from cancers of the trachea, bronchus, and lung was nonsignificantly higher in the cohort. Among the workers with 20 years or more of latency, mortality from respiratory cancer was significantly increased in the high-exposure subcohort, which had 1 year or more of exposure (SMR, 142; 95 percent confidence interval, 103 to 192) but not in the subcohort with less than 1 year of exposure (SMR, 103; 95 percent confidence interval, 62 to 161) (Table 2). SMRs for lung cancer are known to be somewhat higher in blue-collar groups than in the general U.S. population because of more cigarette smoking in the blue-collar groups.³⁶ However, the increased number of lung cancers in the high-exposure subcohort was probably not due to confounding by smoking, for several reasons. First, other diseases related to smoking were not more common than expected in this subco-

on death certificates and assigned to the ICD category "malignant neoplasms of connective and other soft tissue." In the cohort, mortality from soft-tissue sarcoma was nonsignificantly higher than in the reference population (four deaths; SMR, 338; 95 percent confidence interval, 92 to 865) (Table 2). The deaths occurred at 2 of the 12 plants, with a significant increase at 1 plant (two deaths; SMR, 1512; 95 percent confidence interval, 183 to 5462). A review of tissue specimens from the four men whose deaths were attributed to soft-tissue sarcoma showed that only two were in fact soft-tissue sarcomas (Cases 1 and 4, Table 3).³³ Mortality from soft-tissue sarcomas was increased significantly in the subcohort of 1520 workers with 1 year or more of exposure and at least 20 years of latency (the high-exposure subcohort) (three deaths; SMR, 922; 95 percent confidence interval, 190 to 2695). Two other deaths in the cohort (Cases 5 and 6) were attributed to soft-tissue sarcoma according to hospital records, and one of them (Case 5) was confirmed by review of a tissue specimen. These two deaths did not contribute to mortality due to soft-tissue sarcoma in our life-table analysis, because the deaths were assigned other ICD codes. We are aware of a seventh death from soft-tissue sarcoma, which occurred in a group of 139 workers with chloracne who were excluded from the cohort because they did not meet the entry criteria.

In the cohort, the SMRs for the other cancers of a priori interest were nonsignificantly increased (Table 2). There were no deaths from nasal cancer, although approximately one was expected. In the high-exposure subcohort, the SMRs were nonsignificantly higher for Hodgkin's disease and stomach cancer and lower for non-Hodgkin's lymphoma and cancer of the liver, biliary passages, and gallbladder (Table 2).

A Posteriori Findings

A small but significant increase in mortality due to all cancers combined was observed in the entire cohort (SMR, 115; 95 percent confidence interval, 102 to

130). In the high-exposure subcohort the SMR was 146 (95 percent confidence interval, 121 to 176) (Table 2). At 9 of the 12 plants, mortality from all cancers combined was increased; at one of these plants the increase was statistically significant. Mortality was significantly higher than expected in the category of cancers of unspecified sites, which included those of rare sites not included in a category of the life-table analysis and those for which no primary site was listed on the death certificate. Hospital records, which were obtained for 96 percent of these cancers, revealed no particular clustering according to site.

The cohort had a nonsignificant increase in mortality from cancers of the trachea, bronchus, and lung (ICD code 162; SMR, 111; 95 percent confidence interval, 89 to 137). Mortality from cancers of the respiratory system (ICD codes 160 to 165) was significantly higher than expected in the high-exposure subcohort (SMR, 142; 95 percent confidence interval, 103 to 192) (Table 2). To estimate the effect of smoking on the increase in lung cancer, the expected number of lung cancers was adjusted according to the smoking prevalence found in lifetime histories obtained in 1987 by interviewing 223 workers from two plants.²⁵ This adjustment increased the expected number of lung cancers in the overall cohort by 5 percent and in the high-exposure subcohort by 1 percent, which reduced the SMR in the full cohort to 105 (95 percent confidence interval, 85 to 130) and in the high-exposure subcohort to 137 (95 percent confidence interval, 98 to 187).

Analyses According to Duration of Exposure and Employment

The study cohort worked a mean of 2.7 years in processes involving TCDD contamination and 12.6 years at the plants. The high-exposure subcohort worked a mean of 6.8 years in processes involving TCDD contamination and a mean of 19.2 years in total employment at the plants.

The numbers of deaths due to the rare cancers of

Table 3. Deaths from Soft-Tissue Sarcoma among Workers in the Cohort.*

CASE NO.	YEARS EMPLOYED	TYPE OF EXPOSURE	YEAR FIRST EXPOSED	YEARS EXPOSED	YEAR OF DEATH	LATENCY (YR)†	CAUSE OF DEATH		
							DEATH CERTIFICATE	HOSPITAL RECORDS	TISSUE REVIEW‡
1	1946-1978	TCP and 2,4,5-T	1950	8.8	1978	28	MFH	MFH	MFH
2	1946-1972	TCP and 2,4,5-T	1948	7.1	1972	24	Liposarcoma	Liposarcoma	Carcinoma, poorly differentiated§
3	1950-1975	TCP	1963	1.2	1975	12	Fibrosarcoma	Fibrosarcoma	Renal carcinoma§
4	1951-1982	TCP	1951	14.9	1983	32	MFH	MFH	MFH
5†	1943-1975	TCP or 2,4,5-T	Intermittent	Unknown	1980	Unknown	Carcinomatosis§	Myxoid neurogenic sarcoma	Leiomyosarcoma
6†	1941-1964	TCP	1949	Unknown	1965	16	Metastatic osteosarcoma§	Fibrosarcoma	Not available

*Cases 1 through 5 have been previously described.³³ For other previously described cases, records of exposure to TCDD were not available, and the cases were not included in this cohort study. Some information differs slightly from that reported earlier, since additional records were reviewed. Few details about exposure were available for Cases 5 and 6. TCP denotes 2,4,5-trichlorophenol; 2,4,5-T, 2,4,5-trichlorophenoxyacetic acid; and MFH, malignant fibrous histiocytoma.

†Time from first exposure to death.

‡Not a soft-tissue sarcoma.

§Conducted at the Armed Forces Institute of Pathology.

¶Death was not attributed to soft-tissue sarcoma in the life-table analysis.

(393 deaths; SMR, 96; 95 percent confidence interval, 87 to 106). There were significant reductions in the mortality rates for diseases of the circulatory system (67 deaths; SMR, 77; 95 percent confidence interval, 60 to 98), primarily because of fewer deaths from stroke, and for diseases of the digestive system (38 deaths; SMR, 70; 95 percent confidence interval, 49 to 96), primarily because of fewer deaths from cirrhosis. There were also significantly fewer deaths from alcoholism and personality disorders (2 deaths; SMR, 23; 95 percent confidence interval, 3 to 87). The low mortality from circulatory disease may be a reflection of the "healthy worker" effect — cohorts of workers die at lower rates than the general population, particularly of causes other than cancer.³¹ The reduced number of deaths from cirrhosis and alcoholism implies that this cohort consumed less alcohol than the general

population. Reduction may also have occurred simply by chance, since numerous comparisons were made between the cohort and the U.S. population. Fatal injuries were significantly more frequent in the cohort (106 deaths; SMR, 128; 95 percent confidence interval, 104 to 154), but they did not appear to be associated particularly with exposure to TCDD. Mortality from all cancers combined (265 deaths; SMR, 115; 95 percent confidence interval, 102 to 130) was significantly elevated in the cohort.

Cancers of a Priori Interest

The term "soft-tissue sarcoma" describes the group of rare malignant neoplasms arising from supporting tissue other than bone.³² We restricted our analysis of mortality due to soft-tissue sarcoma to cases of soft-tissue sarcoma listed as the underlying cause of death

Table 2. Cancer Mortality in the Entire Cohort and in Workers with More Than 20 Years of Latency.

SITE OF CANCER	ICD CODE*	ENTIRE COHORT (N = 5172)†			SUBCOHORT WITH ≥20 YR OF LATENCY (N = 3036)‡					
		deaths observed	deaths expected	SMR	<1 YR OF EXPOSURE (N = 1516)§			≥1 YR OF EXPOSURE (N = 1520)¶		
					deaths observed	deaths expected	SMR	deaths observed	deaths expected	SMR
All cancers	140-208	265	229.9	115 (102-130)**	48	46.8	102 (76-136)	114	78.0	146 (121-176)**
Buccal and pharynx	140-149	5	7.0	70 (23-166)	2	1.4	145 (18-524)	2	2.2	90 (11-325)
Pharynx	146-149	3	3.4	88 (18-259)	2	0.7	298 (36-1080)	0	1.2	0 (—)
Other parts	142-145	2	1.9	105 (13-379)	0	0.4	0 (—)	2	0.6	329 (40-1190)
Digestive organs	150-159	67	59.7	112 (87-143)	13	11.8	111 (59-189)	28	20.1	140 (93-202)
Esophagus	150	9	5.9	152 (70-290)	2	1.2	165 (20-602)	4	2.0	200 (55-513)
Stomach	151	10	9.7	103 (50-190)	3	1.7	178 (37-521)	4	2.9	138 (38-353)
Small intestine and colon	152-153	25	20.4	122 (79-181)	5	4.3	117 (38-274)	13	7.3	178 (95-304)
Rectum	154	5	5.6	89 (29-209)	1	1.0	100 (3-557)	2	1.7	115 (14-415)
Liver and biliary	155, 156	6	5.2	116 (42-252)	1	1.0	100 (3-557)	1	1.7	59 (1-327)
Pancreas	157	10	11.9	84 (40-155)	1	2.4	41 (1-232)	4	4.0	100 (27-253)
Peritoneum and unspecified	158, 159	2	1.1	184 (22-666)	0	0.2	0 (—)	0	0.4	0 (—)
Respiratory system	160-165	96	84.5	113 (92-139)	19	18.4	103 (62-161)	43	30.2	142 (103-192)
Larynx	161	7	3.3	211 (84-434)	2	0.7	297 (36-1074)	3	1.1	268 (55-783)
Trachea, bronchus, and lung	162	89	80.1	111 (89-137)	17	17.5	96 (56-155)	40	28.8	139 (99-189)
Male genital organs	185-187	17	15.3	111 (65-177)	2	3.2	63 (8-229)	9	6.0	149 (68-283)
Prostate	185	17	13.9	122 (71-195)	2	3.0	67 (8-237)	9	5.9	152 (70-290)
Urinary organs	188-189	17	11.4	148 (86-238)	3	2.4	128 (26-373)	6	4.0	149 (55-324)
Kidney	189.0-189.2	8	5.7	140 (60-275)	3	1.2	253 (52-742)	2	1.9	106 (13-384)
Bladder and other	188, 189.3-189.9	9	5.7	157 (72-298)	0	1.2	0 (—)	4	2.2	186 (51-476)
Lymphatic and hematopoietic tissue	200-208	24	22.1	109 (70-162)	4	3.9	102 (28-260)	8	6.4	125 (54-247)
Hodgkin's disease	201	3	2.5	119 (25-349)	0	0.2	0 (—)	1	0.4	276 (7-1534)
Non-Hodgkin's lymphoma††	200, 202	10	7.3	137 (66-254)	2	1.5	135 (16-488)	2	2.1	93 (11-337)
Lymphosarcoma and reticulosarcoma††	200	5	3.5	142 (46-332)	0	0.6	0 (—)	1	0.9	107 (3-594)
Other lymphatic††	202	5	3.7	133 (43-313)	2	0.9	215 (26-779)	1	1.4	71 (2-385)
Multiple myeloma††	203	5	3.0	164 (53-385)	0	0.6	0 (—)	3	1.1	262 (54-766)
Leukemia and aleukemia	204-208	6	8.9	67 (24-146)	2	1.6	126 (15-457)	2	2.6	77 (9-277)
Other sites	170-173, 190-199	39	29.6	131 (94-180)	5	5.8	87 (28-202)	18	9.0	201 (118-316)**
Skin	172, 173	4	4.9	82 (22-211)	0	0.9	0 (—)	2	1.3	155 (19-559)
Brain and nervous system	191, 192	5	7.3	68 (22-160)	0	1.3	0 (—)	2	1.9	106 (13-384)
Bone	170	2	0.9	227 (27-819)	0	0.1	0 (—)	1	0.2	521 (13-2903)
Connective tissue and soft tissue	171	4	1.2	338 (92-865)	0	0.2	0 (—)	3	0.3	922 (190-2695)**
Other and unspecified	194-199	24	14.8	162 (104-241)**	5	3.1	159 (52-372)	10	5.1	196 (94-361)

*From the *International Classification of Diseases*, 9th revision.

†Mean number of years exposed, 2.7; mean number of years employed, 12.6.

‡Excludes 202 workers for whom the duration of assignment to processes involving TCDD contamination was not available from work records.

§Mean number of years exposed, 0.3; mean number of years employed, 10.7; 12,299 person-years at risk.

¶Mean number of years exposed, 6.8; mean number of years employed, 19.2; 15,136 person-years at risk.

||SMR equals deaths observed divided by deaths expected and multiplied by 100. Slight differences are due to rounding. Values in parentheses are 95 percent confidence intervals.

**P<0.05.

††Person-years at risk and observed deaths are computed from 1960; no deaths occurred before that year.

were independently classified by two nosologists according to the rules of the revision of the *International Classification of Diseases (ICD)* in effect at the date of death.²⁷

Life-table analysis was used to evaluate mortality in the cohort.²⁸ At each plant, the number of person-years at risk was calculated as the interval between the first systematically documented assignment to a process involving TCDD contamination and the date of death or December 31, 1987, whichever occurred first. Those whose vital status was unknown were assumed to be alive at the end of the study. Standardized mortality ratios (SMRs) were computed by dividing the observed number of deaths by the expected number and multiplying by 100, after stratification to adjust for the confounding effects of age, race, and year of death. Two-sided 95 percent confidence intervals were computed for each cause-specific SMR, with use of the Byar approximation for eight deaths or more and Fisher's exact method for fewer than eight deaths.²⁹ The U.S. population was used as the reference group, because the 12 plants were located in 11 states throughout the country.

Analyses According to Duration of Exposure and Employment

Duration of exposure was defined as the number of years the worker was employed in processes involving TCDD contamination and was calculated with data from personnel records. We used duration of exposure as a surrogate for cumulative exposure to TCDD on the basis of the high correlation of the logarithm of serum TCDD levels with the logarithm of the number of years assigned to processes involving TCDD contamination in our sample of 253 workers (Pearson's product-moment coefficient $r = 0.72$) (Fig. 1), and on the assumption that the production processes were similar in the 12 plants.²⁵

Because of the concentration of person-years in the short-duration categories, duration of exposure was stratified before analysis into categories of <1, 1 to <5, 5 to <15, and ≥ 15 years (Table 1). Mortality was also examined according to time since first exposure (latency) in periods of 0 to <10, 10 to <20, and ≥ 20 years since first exposure. To examine mortality in a subgroup with substantial exposure and adequate time for cancer to develop, we identified a group of workers who had 1 year or more of exposure to processes involving TCDD contamination and at least 20 years of latency. One year was chosen as a cutoff point for this high-exposure sub-cohort because in the sample of workers whose serum TCDD levels were measured, 100 percent of those exposed for more than one year had serum TCDD levels higher than the mean level in the unexposed reference group (7 pg per gram of lipid). For this sub-cohort, the number of person-years at risk was calculated from the date the person attained both 20 years of latency and 1 year of exposure.

Most of the 12 plants were large U.S. chemical manufacturing sites that produced thousands of chemicals. Complete documentation of each worker's exposures was impossible. A separate measure called "duration of employment," defined as the total time that each worker was employed at a study plant, was therefore used. Because of the long total employment at the plants, analyses according to duration of employment were stratified into periods of <5, 5 to <10, 10 to <15, 15 to <20, 20 to <25, 25 to <30, and ≥ 30 years (Table 1). For these analyses, latency was defined as time since first employment.

When the SMRs showed an apparent trend associated with duration of exposure or employment and when the observed numbers of deaths were sufficiently large, we conducted internal comparisons using directly standardized rate ratios and tests for trend.³⁰ For the standardized rate ratios, the cause-specific mortality rate in each of the categories of longer duration was compared with the rate in the category of shortest duration, after stratification of the rates for the potential confounding effects of age, race, and calendar time.

RESULTS

The cohort of 5172 male workers from 12 plants had 116,748 person-years of observation. Table 1 describes the vital status, race, latency, and duration of

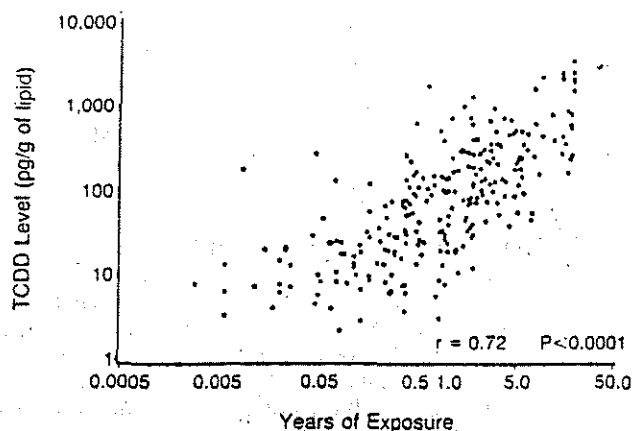


Figure 1. Serum Levels of TCDD, as Adjusted for Lipids, in 253 Workers, According to Years of Exposure.

exposure and employment of the workers. Overall mortality for all causes of death was similar to national rates in the United States (1052 deaths; SMR, 99; 95 percent confidence interval, 93 to 105). Mortality from heart disease was also similar to national rates

Table 1. Vital Status and Demographic and Employment Characteristics of the Study Cohort.

VARIABLE	NUMBER (PERCENT)
Vital status*	
Alive	4043 (78)
Dead	1052 (20)
Unknown	77 (2)
Total	5172 (100)
Deaths*	
White men	985 (94)
Nonwhite men	67 (6)
Total	1052 (100)
Death certificates obtained	1037 (99)
Race	
White	4590 (89)
Nonwhite	385 (7)
Unknown	197 (4)
Total	5172 (100)
Duration of exposure (yr)†	
<1	2697 (54)
1 to <5	1427 (29)
5 to <15	639 (13)
≥ 15	207 (4)
Total	4970 (100)
Duration of employment (yr)†	
<5	2125 (43)
5 to <10	501 (10)
10 to <15	605 (12)
15 to <20	403 (8)
20 to <25	391 (8)
25 to <30	415 (8)
≥ 30	530 (11)
Total	4970 (100)
Years since first exposure (latency)†	
<10	271 (5)
10 to <20	1663 (33)
≥ 20	3036 (61)
Total	4970 (100)
Years since last exposure†	
<10	453 (9)
10 to <20	1789 (36)
≥ 20	2728 (55)
Total	4970 (100)

*As of December 31, 1987.

†Excludes 202 workers for whom duration of assignment to processes involving TCDD contamination was not available from work records.

CANCER MORTALITY IN WORKERS EXPOSED TO 2,3,7,8-TETRACHLORODIBENZO-*p*-DIOXIN

MARILYN A. FINGERHUT, PH.D., WILLIAM E. HALPERIN, M.D., DAVID A. MARLOW, B.S.,
LAURIE A. PIACITELLI, M.S., PATRICIA A. HONCHAR, PH.D., MARIE H. SWEENEY, PH.D.,
ALICE L. GREIFE, PH.D., PATRICIA A. DILL, A.B., KYLE STEENLAND, PH.D.,
AND ANTHONY J. SURUDA, M.D.

Abstract Background. In both animal and epidemiologic studies, exposure to dioxin (2,3,7,8-tetrachlorodibenzo-*p*-dioxin, or TCDD) has been associated with an increased risk of cancer.

Methods. We conducted a retrospective cohort study of mortality among the 5172 workers at 12 plants in the United States that produced chemicals contaminated with TCDD. Occupational exposure was documented by reviewing job descriptions and by measuring TCDD in serum from a sample of 253 workers. Causes of death were taken from death certificates.

Results. Mortality from several cancers previously associated with TCDD (stomach, liver, and nasal cancers, Hodgkin's disease, and non-Hodgkin's lymphoma) was not significantly elevated in this cohort. Mortality from soft-tissue sarcoma was increased, but not significantly (4 deaths; standardized mortality ratio [SMR], 338; 95 percent confidence interval, 92 to 865). In the subcohort of 1520 workers with ≥ 1 year of exposure and ≥ 20 years of latency, however, mortality was significantly increased for

soft-tissue sarcoma (3 deaths; SMR, 922; 95 percent confidence interval, 190 to 2695) and for cancers of the respiratory system (SMR, 142; 95 percent confidence interval, 103 to 192). Mortality from all cancers combined was slightly but significantly elevated in the overall cohort (SMR, 115; 95 percent confidence interval, 102 to 130) and was higher in the subcohort with ≥ 1 year of exposure and ≥ 20 years of latency (SMR, 146; 95 percent confidence interval, 121 to 176).

Conclusions. This study of mortality among workers with occupational exposure to TCDD does not confirm the high relative risks reported for many cancers in previous studies. Conclusions about an increase in the risk of soft-tissue sarcoma are limited by small numbers and misclassification on death certificates. Excess mortality from all cancers combined, cancers of the respiratory tract, and soft-tissue sarcoma may result from exposure to TCDD, although we cannot exclude the possible contribution of factors such as smoking and occupational exposure to other chemicals. (N Engl J Med 1991; 324:212-8.)

SEVERAL epidemiologic and toxicologic studies have suggested an association between 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD), or the chemicals it contaminates, and soft-tissue sarcoma,^{1,4} Hodgkin's disease,⁵ non-Hodgkin's lymphoma,^{6,8} stomach cancer,^{9,10} nasal cancer,¹¹ and cancer of the liver.^{12,13} In other studies of these cancers, no significant associations with TCDD exposure were found.¹⁴⁻¹⁹ The carcinogenicity of TCDD has been demonstrated in studies of rats, mice, and hamsters; histiocytic lymphomas, fibrosarcomas, and tumors of liver, skin, lung, thyroid, tongue, hard palate, and nasal turbinates have been found.^{12,13,20} TCDD acts as a promoter^{21,22} and may also initiate carcinogenesis.^{12,13,20}

To evaluate the effect of occupational exposure to TCDD, particularly with respect to the cancers listed above, we conducted a retrospective cohort study of mortality among U.S. chemical workers assigned to the production of substances contaminated with TCDD.

METHODS

Identification of Companies

In 1978 the National Institute for Occupational Safety and Health began an effort that would eventually identify the exposed workers at all U.S. chemical companies that had made TCDD-contaminated products between 1942 and 1984. TCDD was generated as a contaminant in the production of 2,4,5-trichlorophenol

and was carried into subsequent production processes.²³ One derivative, 2,4,5-trichlorophenoxyacetic acid, was widely used in the United States to kill brush and was a constituent of defoliants such as Agent Orange. Other derivatives included the herbicides 2-(2,4,5-trichlorophenoxy)propionic acid (Silvex) and 2-(2,4,5-trichlorophenoxy)-ethyl 2,2-dichloropropionate (Erbon), the insecticide *O,O*-dimethyl *O*-(2,4,5-trichlorophenyl)phosphorothioate (Ronnel), and the bactericide 2,2'-methylene-bis[3,4,6-trichlorophenol] (hexachlorophene).

Identification of Exposed Workers

Workers from 12 companies were included in the study cohort if a personnel or payroll record documented that they had been assigned to a production or maintenance job in a process involving TCDD contamination ($n = 5000$), or if they had been identified in a previously published study on the basis of exposure to TCDD ($n = 172$).²⁴ Personnel records for 202 workers did not reveal the duration of their assignment to processes involving TCDD contamination; they were therefore included in the analysis of overall mortality but excluded from analyses according to duration of exposure. Sixty-seven women are not included in this report; there were 10 deaths among them, including a single death from cancer (lung cancer).

At each plant, we made a thorough review of operating conditions, job duties, and records of TCDD levels in industrial-hygiene samples, intermediate reactants, products, and wastes. This review provided clear evidence of potential daily exposure to TCDD. The production of TCDD-contaminated substances at the various plants involved similar raw materials, processes, and job duties.²⁵ However, there were differences between jobs and between plants in the extent of TCDD exposures. Occupational exposure to substances contaminated with TCDD was confirmed by measuring serum TCDD levels, as adjusted for lipids, in 253 surviving members of the study cohort from two plants who were also participants in a related cross-sectional medical study.²⁶

Life-Table Analysis

Vital status was determined as of December 31, 1987, from records of the Social Security Administration or Internal Revenue Service, or from the National Death Index. All death certificates

From the Industrywide Studies Branch, Division of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health, Centers for Disease Control, 4676 Columbia Pky., Cincinnati, OH 45226, where reprint requests should be addressed to Dr. Fingerhut.

Supported in part by the Agency for Toxic Substances and Disease Registry.

19. Xu, Y.-H., Campbell, H.A., Sattler, G.L., Hendrich, S., Maronpot, R., Sato, K. and Pitot, H.C. (1990) Quantitative stereological analysis of the effects of age and sex on multistage hepatocarcinogenesis in the rat by use of four cytochemical markers. *Cancer Res.*, 50, 472-479.
20. Campbell, H.A., Xu, Y.-H., Hanigan, M.H. and Pitot, H.C. (1986) Application of quantitative stereology to the evaluation of phenotypically heterogeneous enzyme-altered foci in the rat liver. *J. Natl. Cancer Inst.*, 76, 751-767.
21. Steel, R.G.D. and Torrie, J.H. (1980) Enumeration data II: contingency tables, some uses of χ -square. In *Principles and Procedures of Statistics, a Biometrical Approach*. McGraw-Hill Book Company, New York, pp. 469-520.
22. Pitot, H.C., Goldsworthy, T.L., Moran, S., Kennan, W., Glauert, H.P., Maronpot, R.R. and Campbell, H.A. (1987) A method to quantitate the relative initiating and promoting potencies of hepatocarcinogenic agents in their dose-response relationships to altered hepatic foci. *Carcinogenesis*, 8, 1491-1499.
23. Safe, S. (1983) Polychlorinated biphenyls (PCBs) and polybrominated biphenyls: biochemistry, toxicology and mechanisms. *CRC Rev. Toxicol.*, 13, 319-325.
24. Süberhorn, E.M., Glauert, H.P. and Robertson, L.W. (1990) Carcinogenicity of polyhalogenated biphenyls: PCBs and PBBs. *Crit. Rev. Toxicol.*, 20, 439-496.
25. Eriksson, L., Ahluwalia, M., Spiewak, J., Lee, G., Sarma, D.S.R., Roomi, M.J. and Farber, E. (1983) Distinctive biochemical pattern associated with resistance to hepatocytes in hepatocyte nodules during liver carcinogenesis. *Environ. Health Perspect.*, 49, 171-174.
26. Dragan, Y.P., Xu, Y.-H., Bawa, N., Rizvi, T., Campbell, H.A., Maronpot, R.R. and Pitot, H.C. (19??) An initiation-promotion assay in rat liver as a potential complement to the two-year carcinogenesis bioassay. *Fund. Appl. Toxicol.*, in press.
27. Schulte-Hermann, R., Roome, N., Timmermann-Trosiener, I. and Schuppler, J. (1984) Immunocytochemical demonstration of a phenobarbital-induced cytochrome P450 in putative preneoplastic foci of rat liver. *Carcinogenesis*, 5, 149-153.
28. Schwarz, M., Peres, G., Buchmann, A., Friedberg, T., Waxman, D.J. and Kunz, W. (1987) Phenobarbital induction of cytochrome P450 in normal and preneoplastic rat liver: comparison of enzyme and mRNA expression as detected by immunohistochemistry and *in situ* hybridization. *Carcinogenesis*, 8, 1355-1357.
29. Forgue, S.T., Preston, B.D., Hargraves, W.A., Reich, I.L. and Allen, J.R. (1979) Direct evidence that an arene oxide is a metabolic intermediate of 2,5,2',5'-tetrachlorobiphenyl. *Biochem. Biophys. Res. Commun.*, 91, 475-483.
30. Forgue, S.T. and Allen, J.R. (1982) Identification of an arene oxide metabolite of 2,5,2',5'-tetrachlorobiphenyl by gas chromatography-mass spectroscopy. *Chem.-Biol. Interactions*, 40, 233-245.
31. Stadnicki, S.S., Francis, S.D.L. and Allen, J.R. (1979) DNA strand breaks caused by 2,5,2',5'-tetrachlorobiphenyl and its metabolites. *Res. Commun. Chem. Pathol. Pharmacol.*, 24, 313-325.
32. Preston, B.D., Miller, J.A. and Miller, E.C. (1984) Reactions of 2,2',5,5'-tetrachlorobiphenyl 3,4-oxide with methionine, cysteine and glutathione in relation to the formation of methylthio-metabolites of 2,2',5,5'-tetrachlorobiphenyl in the rat and mouse. *Chem.-Biol. Interactions*, 50, 289-312.
33. Sargent, L.M., Roloff, B.D. and Meisner, L.F. (1989) *In vitro* chromosome damage due to PCB interactions. *Mutat. Res.*, 224, 79-88.
34. Wyndham, C., Devenish, J. and Safe, S. (1978) The *in vitro* metabolism, macromolecular binding and bacterial mutagenicity of 4-chlorobiphenyl, a model PCB substrate. *Res. Commun. Chem. Pathol. Pharmacol.*, 15, 563-570.
35. Kawabata, T.T. and White, K.L., Jr (1989) Benzo[a]pyrene metabolism by murine spleen microsomes. *Cancer Res.*, 49, 5816-5822.
36. Buchmann, A., Kunz, W., Wolf, C.R., Oesch, F. and Robertson, L.W. (1986) Polychlorinated biphenyls, classified as either phenobarbital- or 3-methylcholanthrene-type inducers of cytochrome P450, are both hepatic tumor promoters in diethylnitrosamine-initiated rats. *Cancer Lett.*, 32, 243-253.
37. Roomi, M.W., Ho, R.K., Sarma, D.S.R. and Farber, E. (1985) A common biochemical pattern in preneoplastic hepatocyte nodules generated in four different models in the rat. *Cancer Res.*, 45, 564-571.
38. Ghoshal, A., Gurtoo, H.L., Faleto, M.B., Koo, P., Nagi, M. and Farber, E. (1990) Molecular basis for the constitutive decrease in cytochromes P450 in putative preneoplastic hepatocytes. *Proc. Am. Assoc. Cancer Res.*, 31, 136.
39. Goldstein, J.A., Hickman, P., Bergman, H., McKinney, J.D. and Walker, M.P. (1977) Separation of pure polychlorinated biphenyl isomers into two types of inducers on the basis of induction of P450 or P448. *Chem.-Biol. Interactions*, 17, 69-87.
40. Cordle, F., Corneliussen, P., Jelinek, C., Hackley, B., Lehman, R., McLaughlin, J., Rhoden, R. and Shapiro, R. (1978) Human exposure to polychlorinated biphenyls and polybrominated biphenyls. *Environ. Health Perspect.*, 24, 157-172.
41. Sherer, E., Feringa, A.W. and Emmelot, P. (1984) Initiation-promotion-initiation induction of neoplastic foci within islands of precancerous liver cells in the rat. In Börzönyi, M., Lapi, K., Day, N. and Yamasaki, H. (eds), *Models Mechanisms and Etiology of Tumour Promotion*. IARC Scient. Pub. 56, Lyon, pp. 57-66.
42. Pitot, H.C. (1989) Progression: the terminal stages in carcinogenesis. *Jpn. J. Cancer Res.*, 80, 599-607.
43. Schauer, A. and Kunze, E. (1976) Tumours of the liver. In Turusov, V.S. (ed.), *Pathology of Tumours in Laboratory Animals. Vol. 1. Tumours of the Rat, Part 2*. IARC, Lyon, pp. 41-72.
44. Squire, R.A. and Levitt, M.H. (1975) Report of a workshop on classification of specific hepatocellular lesions in rats. *Cancer Res.*, 35, 3214-3223.
45. National Research Council (1980) Histologic typing of liver tumors in the rat. *J. Natl. Cancer Inst.*, 64, 179-206.

Received on August 20, 1990; revised on January 17, 1991; accepted on January 25, 1991

detoxify the reactive intermediate (37). When PB administration followed AAF treatment, however, the level of P450 b/e was induced in AHF that had previously been negative for the enzyme (38). Thus, as a result of the alteration of drug-metabolizing enzymes, cells of AHF may have a selective advantage in a toxic environment. Since the growth of normal cells is suppressed by the cytotoxic effects of these treatments, the preneoplastic cells have an additional proliferative advantage.

The centrilobular to midzonal staining for P450 b/e that was evident in the livers of rats treated with DEN + PB or DEN + both TCBS indicates that enzyme induction occurred in response to these compounds in hepatocytes in these zones. Centrilobular staining with P450 c/d after treatment with DEN + 3,4,3',4'-TCB or DEN + both TCBS indicates that induction of this isozyme also occurred. The dose of 3,4,3',4'-TCB was 0.3% of the 6-day chronic dose used for maximal induction by Clevenger (14), and 0.003% of the acute dose used by Parkinson (6). The dose of 2,5,2',5'-TCB utilized in our studies was 33% of the maximal chronic dose and 3% of the maximal acute dose used in other studies (13,23,24).

The greater than additive effect of the mixture of 3,4,3',4'-TCB and 2,5,2',5'-TCB reported in this study may be the result of one or more of three possible mechanisms: (i) Ah receptor gene expression (1,4,5); (ii) the PB-type of cytochrome P450 response (24,39); (iii) the metabolic activation of PCBs to epoxides (29,30). Glutathione conjugation is the major phase II detoxification pathway for the 3,4-oxide of 2,5,2'-TCB. Several different mechanisms can contribute to the toxic effects of 2,5,2',5'-TCB. Although the mechanism of glutathione depletion may be different in hepatocytes and lymphocytes, continuous exposure to the TCB combination may have resulted in depletion of the glutathione levels in both cell types. Depletion of glutathione would prevent a major part of the detoxification of the 3,4-oxide of 2,5,2',5'-TCB (32).

Our results demonstrate an interaction of low doses of two PCBs *in vivo* in the two major target organs of PCB toxicity, the liver and the immune system, at doses that are relevant to human exposure levels (40). The observation of immune depression and promotion of AHF with very low PCB concentrations suggests that the biological effects of a complex Aroclor mixture in two different target cell populations of PCB toxicity may not be owing simply to the summed effects of each of the constituent chemicals or to the individual concentrations of the most toxic congeners, but rather largely to the effects of only a few constituents interacting at low concentrations.

This study also represents the first report of the appearance of an abnormal population of CD-4 lymphocytes in the peripheral blood after PCB exposure. This may be an important finding not only for rodent exposure, but also for human exposure, because this same PCB combination was very genotoxic to cultured human lymphocytes. The abnormal population of CD-4 cells in the peripheral blood may be the result of a genetic change that occurred in these cells. The aneuploidy of many hepatocytes (L.M.Sargent, G.Sattler, C.A.Sattler, B.Roloff, Y.Xu and H.C.Pitot, in preparation) and numerous large neoplastic nodules exhibiting cellular atypia in the liver are indications that the combination of 3,4,3',4'-TCB and 2,5,2',5'-TCB induces the stage of progression of hepatocarcinogenesis (41,42). Confirmation of this hypothesis will require further testing because the percentage of animals with hepatocellular carcinoma was not elevated after 1 year of treatment in this experiment. The numerous large neoplastic nodules with cellular atypia probably represent rapidly growing populations of abnormal cells. If this

protocol had been allowed to continue further, it is possible that there would have been an increase in the frequency of hepatocellular carcinoma in the livers of rats receiving the combination compared with those administered each TCB alone.

Acknowledgements

We would like to thank Dr Colin Jefcoate for supplying the P450 antibodies. We would like to extend our gratitude to Dr James A. Miller for the gift of 2,5,2',5'-TCB. We also thank Dr David Auerbach and the State Laboratory of Hygiene for their help in performing the flow cytometry. The expert histotechnology of Ms Jane Weeks and Mrs Jennifer Potter is also gratefully acknowledged, as well as the expert technical typing of Mrs Mary Jo Markham. The authors are grateful to Dr Ilse Riegel for technical editing and comments on the manuscript. The experiments described in this document were funded in part by grants from the National Cancer Institute (CA-07175, CA-2284 and CA-45700) and by a training grant from the National Institute of Environmental Health Sciences (ES-07015).

References

1. Safe, S. (1989) Polychlorinated biphenyls (PCBs): mutagenicity and carcinogenicity. *Mutat. Res.*, 220, 31-47.
2. Passivirta, J. and Linko, R. (1980) Environmental toxins in Finnish wildlife. A study of trends of residue contents in fish during 1973-1978. *Chemosphere*, 9, 643.
3. Jacobs, L.W., Chou, S.F. and Tiedje, J.M. (1978) Field concentrations and persistence of polybrominated biphenyls in soils and solubility of polybrominated biphenyls in natural waters. *Environ. Health Perspect.*, 23, 1.
4. Safe, S., Bandiera, S., Sawyer, T., Robertson, L.W., Safe, L., Parkinson, A., Thomas, P.E., Ryan, D.E., Reik, L.M., Levin, W., Denomme, M.A. and Fujita, T. (1985) PCBs: structure-function relationships and mechanisms of action. *Environ. Health Perspect.*, 60, 47-56.
5. Poland, A. and Knutson, J.C. (1982) 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin and related halogenated aromatic hydrocarbons: examination of the mechanism of toxicity. *Annu. Rev. Pharmacol. Toxicol.*, 22, 517-554.
6. Parkinson, A., Robertson, L., Safe, L. and Safe, S. (1981) Polychlorinated biphenyls as inducers of hepatic microsomal enzymes: structure-activity rules. *Chem.-Biol. Interactions*, 35, 1-2.
7. McKinney, J.D. and Singh, P. (1981) Structure-activity relationships in halogenated biphenyls: unifying hypothesis for structural specificity. *Chem.-Biol. Interactions*, 33, 271-283.
8. Yoshimura, H., Yoshihara, S., Ozawa, N. and Miki, M. (1979) Possible correlation between induction modes of hepatic enzymes by PCBs and their toxicity in rats. *Ann. NY Acad. Sci.*, 320, 179-192.
9. Silkworth, J.B. and Grabstein, E.M. (1982) Polychlorinated biphenyl immunotoxicity: dependence on isomer planarity and the Ah gene complex. *Toxicol. Appl. Pharmacol.*, 65, 109-119.
10. Greenlee, W.F. and Irons, R.E. (1981) Modulation of benzene-induced lymphocytopenia in the rat by 2,4,5,2',4',5'-hexachlorobiphenyl and 3,4,4',5'-tetrachlorobiphenyl. *Chem.-Biol. Interactions*, 33, 345-360.
11. Wölflle, D., Münzel, P., Fischer, G. and Bock, K.-W. (1988) Altered growth control of rat hepatocytes after treatment with 3,4,3',4'-tetrachlorobiphenyl *in vivo* and *in vitro*. *Carcinogenesis*, 9, 919-924.
12. Osterle, D. and Deml, E. (1981) Promotion effect of various PCBs and DDT on enzyme altered islands in rat liver. *Naun-Schmidberg's Arch. Pharmacol. Suppl. R*, 16, 316.
13. Preston, B.D., Miller, E.C. and Miller, J.A. (1985) The activities of 2,2',5,5'-tetrachlorobiphenyl, its 3,4-oxide metabolite and 2,2',5,5'-tetrachlorobiphenyl in tumor induction and promotion assays. *Carcinogenesis*, 6, 451-453.
14. Clevenger, M.A., Roberts, S.M., Sartin, D.L., Harbison, R.D. and James, R.C. (1989) The pharmacokinetics of 2,2',5,5'-tetrachlorobiphenyl and 3,3',4,4'-tetrachlorobiphenyl and its relationship to toxicity. *Toxicol. Appl. Pharmacol.*, 100, 315-327.
15. Pitot, H.C., Campbell, H.A., Maronpot, R., Nimrat, B., Rizvi, T.A., Xu, Y.-H., Sargent, L.M., Dragan, Y. and Pyron, M. (1989) Critical parameters in the quantitation of the stages of initiation, promotion, and progression in one model of hepatocarcinogenesis in the rat. *Toxicol. Pathol.*, 17, 594-612.
16. Pitot, H.C., Barsness, L., Goldsworthy, T. and Kitagawa, T. (1978) Biochemical characterization of stages of hepatocarcinogenesis after a single dose of diethylnitrosamine. *Nature*, 271, 456-458.
17. Yam, L.T., Li, C. and Crosby, W.H. (1971) Cytochemical identification of monocytes and granulocytes. *Am. J. Clin. Pathol.*, 55, 283-290.
18. Braylan, R.C. (1983) Attributes and applications of flow cytometry. *Ann. Clin. Lab. Sci.*, 13, 379-384.

Table II. AHF-positive P450 b/e expression after 1 year of treatment (%)

Groups	Foci positive for P450 b/e (%)
4	10 ± 7
10	68 ± 10
8	60 ± 5
12	65 ± 5
11	— ^a
3	— ^a
5	— ^a
9	40 ± 6

^aToo few AHF to report significant data.

Table III. Promoting agents and promotion index

Promoting agents	Promotion index ^a
PB	100
3,4,3',4'-TCB (0.1 p.p.m.)	1.5 × 10 ⁴
2,5,2',5'-TCB (10 p.p.m.)	200
2,5,2',5'-TCB (100 p.p.m.)	250
2,5,2',5'-TCB (10 p.p.m.) and 3,4,3',4'-TCB (0.1 p.p.m.)	8 × 10 ⁵
2,3,7,8-TCDD ^b	2.8 × 10 ⁷

^aSee text for details of calculations. Promotion indices were determined in animals that had been initiated with DEN (10 mg/kg) following a 70% partial hepatectomy (see text for details).

^bRef. 22.

in comparison with PB from this experiment and 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) from an earlier study (22). By contrast, a 10-fold higher dose of 2,5,2',5'-TCB did not cause a significant increase in either the promotion index or the number of hepatic preneoplastic foci (Figure 9). The promotion index of 2,5,2',5'-TCB was also considerably less than that of 3,4,3',4'-TCB. The combination of the two congeners caused a dramatic increase in the number (Figure 9) and volume fraction (Figure 10) of preneoplastic foci. Indeed, the promotion index of the TCB combination is almost within one order of magnitude of that of TCDD, which has the highest known promotion potency of any compound (Table III). The number of animals treated with both TCBS that had numerous large neoplastic nodules exhibiting cellular atypia was also greater than that seen in either group treated with a single TCB.

The two TCB congeners differ in toxicity and binding affinity for the Ah receptor (8,23,24); however, the systemic clearance and volume of distribution of 3,4,3',4'-TCB and 2,5,2',5'-TCB are essentially the same (15). When single PCB congeners were examined by others, the promotion potency could be correlated with the affinity for the Ah receptor (23). Our results also demonstrated that the strong Ah receptor ligand, 3,4,3',4'-TCB, was a strong promoter of AHF, but the non-planar congener was a weak promoter relative to 3,4,3',4'-TCB and TCDD. Furthermore, previous results have shown that TCDD, which has a 500-fold greater affinity for the Ah receptor than TCBS, was a stronger promoter than 3,4,3',4'-TCB (24). The non-planar congeners, 2,4,5,2',4',5'-TCB (23), 2,4,2',4'-TCB and 2,5,2',5'-TCB, have been reported to exhibit promoting activity for hepatic preneoplastic foci (14). The presence of chlorine substitution in the *para* position correlated with an enhancement of promoting potency, but all the non-planar congeners were less potent than the planar 3,4,3',4'-TCB.

An enhancement of the amount of P450 b/e enzymes was seen

in preneoplastic hepatic foci (AHF) of rats receiving 10 p.p.m. 2,5,2',5'-TCB or 100 p.p.m. 2,5,2',5'-TCB and to an even greater extent in the DEN + both TCBS group. This same enhancement of the P450 b/e enzymes was observed in AHF of the DEN + PB treatment group. Many of the changes in gene expression seen in AHF may occur as a result of the selection of a population of altered cells that are resistant to the specific treatment utilized (25) or are selectively stimulated to grow by the particular promoting agent (26). Enhancement of the expression of this detoxification enzyme in cells of AHF is also exemplified by an increase of P450 b/e following promotion with PB as well as hexachlorocyclohexane (27,28).

The greater than additive toxicity of 3,4,3',4'-TCB and 2,5,2',5'-TCB that was seen *in vivo* in hepatocytes and lymphocytes may have been owing to the metabolic activation of the 2,5,2',5'-TCB congener to an epoxide intermediate (14, 29,30). This epoxide intermediate is more toxic and more chromosome damaging than the parent compound (31) and has been shown to bind to DNA (29,32). PCB congeners that have both the *meta* and *para* sites available for oxidation can be metabolized through an epoxide intermediate. These intermediates can bind to DNA and have been found to be mutagenic (25,31). Examination of the dose-response curves of previous *in vitro* studies of chromosome damage in human lymphocytes (33) caused by 3,4,3',4'-TCB and a combination of 3,4,3',4'-TCB + 2,5,2',5'-TCB demonstrated that the two dose-response curves are parallel. This would suggest that the two events occurred by a common mechanism. Lymphocytes express the Ah receptor and have been shown to respond to the Ah receptor ligands by an increase in P450 c/d. Metabolic changes resulting from the combined induction of P450 c/d and P450 b/e can result in the metabolic activation of 4-chlorobiphenyl (34). Inhibition of P450 c/d metabolism of 2,5,2',5'-TCB results in greater formation of the 3,4-diol and the 4-OH form, indicating that more 3,4-oxide occurs following P450 c/d induction. The induction of P450 b/e enzymes results in detoxification of the 2,5,2',5'-TCB congener by direct *meta*-hydroxylation (32). The absence of the detoxification pathway (P450 b/e) and the presence of the activation pathway (c/d induction) may explain the greater sensitivity of the lymphocytes to 2,5,2',5'-TCB observed in the *in vivo* studies (35). The enhancement of the P450 b/e expression in preneoplastic foci resulting from treatment with both TCBS and with DEN + 2,5,2',5'-TCB as well as with DEN + PB may result in a selective reduced toxicity to 2,5,2',5'-TCB conferred to these cells by this gene expression.

Although centrilobular to midzonal staining for P450 b/e was observed by Buchman *et al.* (36) after DEN initiation and promotion with 3,4,5,3',4',5'-hexachlorobiphenyl (HCB) or with 2,4,5,2',4',5'-HCB, no increased staining for the P450 b/e isozyme occurred in AHF with this protocol. The 2,4,5,2',4',5'-HCB congener is an inducer of the P450 b/e isozyme; however, this congener is not known to be metabolized by this form or any other form of P450. Increased expression of a detoxification enzyme in cells of AHF has been observed as an increase of P450 b/e after promotion with PB as well as with hexachlorocyclohexane (36). Cells of AHF resulting from *N*-hydroxy ethylnitrosamine treatment exhibit reduced levels of P450 b/e and P450 c/d forms and an increase in glutathione S-transferase and epoxide hydrolase (23). Chronic treatment of rats with 2-acetylaminofluorene, which is metabolized by multiple forms of P450 (36), causes the proliferation of focal areas of preneoplastic hepatocytes; this may significantly lower the expression of many P450 genes as well as increase the conjugating enzymes that

Volume Fraction of the Liver Occupied by Altered Hepatic Foci After DEN Initiation and 12 Months of Treatment with Phenobarbital

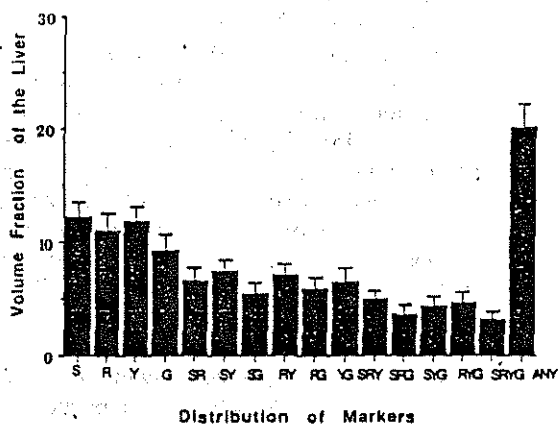


Fig. 7. Distribution of the volume fraction of AHF scored by multiple markers for AHF following initiation with 10 mg DEN/kg and 1 year of exposure to 0.1 p.p.m. 3,4,3',4'-TCB and 10 p.p.m. 2,5,2',5'-TCB (group 8, Figure 1). Abbreviations: S, glutathione S-transferase-positive volume fraction; R, GGT-positive volume. Y, ATPase-negative volume; G, G6Pase-negative volume; SR, S and R combined; SY, S and Y combined; SG, S and G combined; RY, R and Y combined; RG, R and G combined; YG, Y and G combined; SYG, S and Y and G combined; SRY, S and R and Y combined. See ref. 19 for further details.

Distribution of the Volume Fraction of the Liver Occupied by Preneoplastic Foci after DEN Initiation and 12 Months of Promotion with .1 ppm 3,4,3',4'-TCB and 10 ppm 2,5,2',5'-TCB

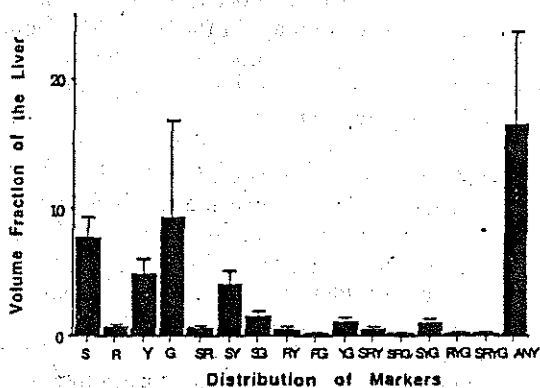


Fig. 8. Histogram of the distribution of the volume fraction of AHF scored by multiple markers for AHF following initiation with 10 mg DEN/kg and 1 year of exposure to 0.05% PB (group 12, Figure 1). See legend to Figure 7 for marker designation.

light-staining CD-4 cells was not a monocyte population, but was a new population of CD-4 cells exhibiting an abnormal surface membrane configuration.

The results from this research also demonstrated that the planar congener had more potent effects in liver cells than the non-planar TCB. The low dose of 3,4,3',4'-TCB chosen for this study produced a moderate increase in the volume of preneoplastic foci as well as an increase in chromosome damage (L.Sargent and H.C.Pitot, unpublished observations). The relative potency of promoting agents has been expressed by the following relationship:

$$\text{promotion index} = V_f/V_c \times 1/\text{mmol per week}$$

where V_f is the total volume fraction (%) occupied by AHF in the livers of rats treated with the promoting agent, V_c is the total

Volume Fraction of the Liver Occupied by Altered Hepatic Foci after DEN Initiation and 12 Months of Treatment with Phenobarbital or Tetrachlorobiphenyls

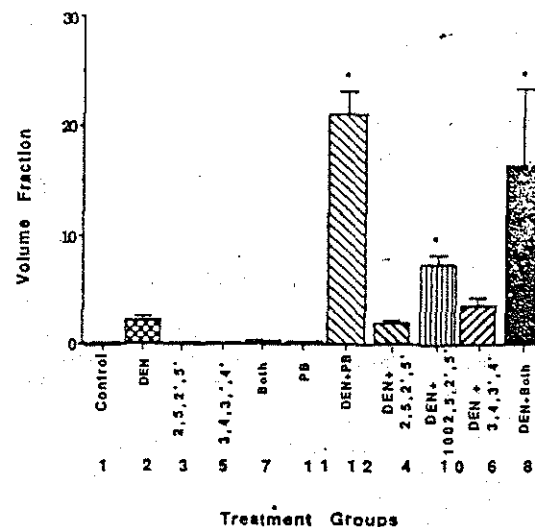


Fig. 9. Number of AHF per liver after initiation with 10 mg DEN/kg and/or 1 year of exposure to 0.1 p.p.m. 3,4,3',4'-TCB (groups 6 and 5), 10 p.p.m. 2,5,2',5'-TCB (groups 4 and 3), 0.1 p.p.m. 3,4,3',4'-TCB + 10 p.p.m. 2,5,2',5'-TCB (groups 8 and 7) or to 0.05% PB in the diet for 1 year (groups 12 and 11). Eleven animals per group were killed after each treatment. The bars above the columns indicate the standard error of the mean from 11 animals. See Figure 1 for details of each group designated by number under the columns. *P < 0.001 by Student's *t*-test.

The Mean Number of Preneoplastic Foci Per Liver Following DEN Initiation and 12 Months of Promotion with Tetrachlorobiphenyls or Phenobarbital

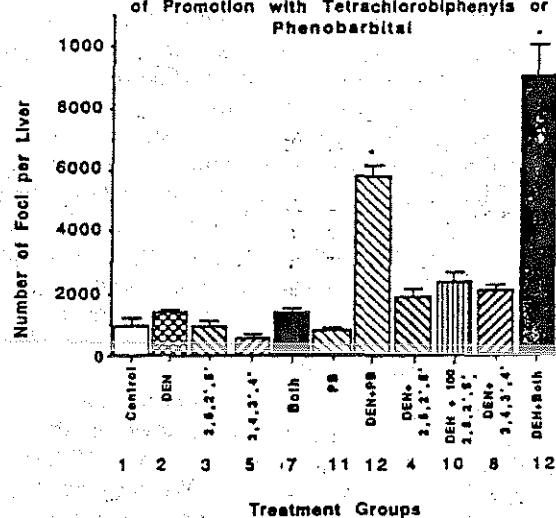


Fig. 10. Volume fraction (%) of AHF following initiation with 10 mg DEN/kg and/or 1 year of exposure to 0.1 p.p.m. 3,4,3',4'-TCB (groups 6 and 5), 10 p.p.m. 2,5,2',5'-TCB (groups 4 and 3), 0.1 p.p.m. 3,4,3',4'-TCB + 10 p.p.m. 2,5,2',5'-TCB (groups 8 and 7) or to 0.05% PB (groups 12 and 11) in the diet for 1 year. Each group had 11 animals. See legend to Figure 9 for further details.

volume of AHF in control animals that have only been initiated and not treated with the promoting agent, and mmol is the number of millimoles of the promoting agent.

The promotion index (22) is based on the total number of altered cells within all AHF, thus giving a measure of tumor promotion. Table III shows the relative promotion indices of 3,4,3',4'-TCB and 2,5,2',5'-TCB as well as their combination

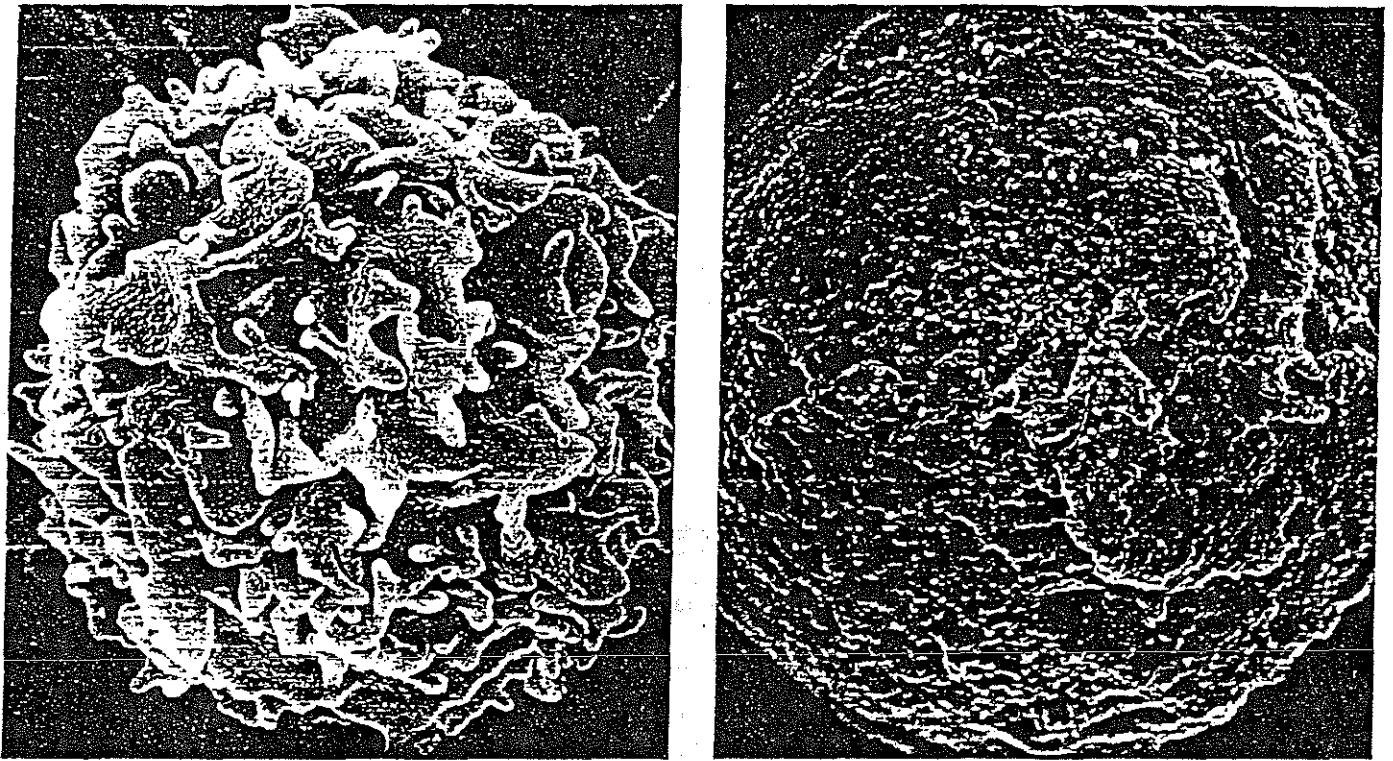


Fig. 5. Scanning electron micrograph of a normal T-helper cell (left) and an abnormal T-helper cell (right) isolated from the peripheral blood of an animal fed 0.1 p.p.m. 3,4,3',4'-TCB + 10 p.p.m. 2,5,2',5'-TCB for 1 year ($\times 5000$). See text for details.

cytochrome P450 marker in the DEN + 100 p.p.m. 2,5,2',5'-TCB group. A larger number of positive foci was found in the group treated with DEN + both TCBs ($60 \pm 5\%$) than would be expected on the basis of the result seen with 10 p.p.m. 2,5,2',5'-TCB alone. The number of P450 b/e positive foci found in the DEN + PB group was as large as that of the group given DEN + both TCBs ($65 \pm 5\%$) (Table II).

The expression of P450 c/d was localized to the centrolobular and midzonal region of the regenerated liver in the DEN + 3,4,3',4'-TCB group, the DEN + both TCBs group, and the TCBs group (groups 6, 8 and 9). Centrilobular to midzonal staining was also seen with P450 b/e in the DEN + 10 p.p.m. 2,5,2',5'-TCB, the DEN + 100 p.p.m. 2,5,2',5'-TCB, the DEN + both TCBs and the DEN + PB groups. This degree of staining indicates that P450 c/d was induced by these regimens. In addition, P450 b/e was examined; in the DEN + PB group (group 12 in Figure 1), 76% of the PGST and 32% of the ATP-deficient foci were positive for this enzyme. In the DEN + 100 p.p.m. 2,5,2',5'-TCB group, 22% of the PGST-positive AHF and 41% of the ATP-negative AHF were positive for P450 b/e. When both TCBs were administered, 40% of the PGST and 40% of the ATP-deficient foci were positive for P450 b/e.

The combination of both TCBs also caused a superadditive increase in the number of animals with neoplastic nodules exhibiting cellular atypia ($P < 0.05$, Table I); however, only two of the animals treated with DEN + both TCBs developed hepatocellular carcinoma (HCC). Treatment with DEN + PB for 1 year caused 80% of the animals to develop HCC.

Discussion

The planar congener, 3,4,3',4'-TCB, and its non-planar isomer, 2,5,2',5'-TCB, which are found in the major Aroclor mixtures 1254, 1242 and 1248, induced a greater than additive toxicity

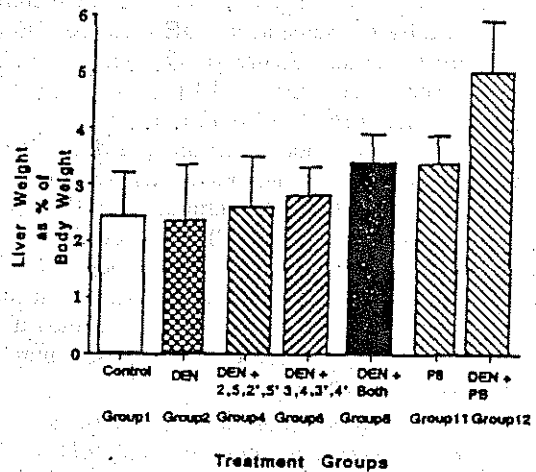


Fig. 6. Histogram of the ratio of the regenerated liver to body wt following 10 mg DEN/kg and 1 year of exposure to TCBs or to PB. The group numbers below each bar refer to the groups listed in Figure 1. The group designated PB is group 11 of Figure 1. Groups seen in Figure 1 not shown in this figure exhibited no significant change from the group 1 control.

in the two major target cell types of PCB toxicity, hepatocytes and lymphocytes, in the studies described here. Our results demonstrated that low doses of the planar 3,4,3',4'-TCB were more toxic to lymphocytes than a 100-fold higher dose of the non-planar 2,5,2',5'-TCB congener. The 3,4,3',4'-TCB congener caused a reduction in the number of B-cells. A similar reduction of B-cells has been noted after acute exposure to 3,4,3',4'-TCB (10). The combination of the two TCBs caused a greater than additive decrease in the number of circulating B-cells as well as the appearance of an abnormal subpopulation of T-helper cells. The esterase test verified that this abnormal population of

Table I. Histopathologic changes in livers of rats on protocols depicted in Figure 1^a

Group no.	Treatment	Portal damage ^b	Bile duct proliferation	Neoplastic nodules/rat	Cellular atypia/neoplastic nodule/rat ^c	HCC/rat
1	Control	—	2/8	—	—	1/8
2	DEN	0/8	2/8	1/8	1/8	1/8
3	2,5,2',5'-TCB (10 p.p.m.)	0/14	2/14	2/14	0/14	0/14
4	DEN + 10 p.p.m. 2,5,2',5'-TCB	2/12	1/12	4/12	1/12	1/12
5	3,4,3',4'-TCB (0.1 p.p.m.)	0/14	5/14	3/14	0/14	0/14
6	DEN + 0.1 p.p.m. 3,4,3',4'-TCB	0/12	4/12	4/12	0/12	0/12
7	3,4,3',4'-TCB + 2,5,2',5'-TCB	9/12	9/12	1/12	1/12	0/12
8	DEN + 3,4,3',4'-TCB + 2,5,2',5'-TCB	9/11	11/11	11/11	9/11	2/11
10	DEN + 100 p.p.m. 2,5,2',5'-TCB	3/5	2/5	—	—	—
12	DEN + PB	2/11	11/11	11/11	11/11	9/11

^aData are presented as the number of rats exhibiting the pathologic process/total number of rats examined.

^bIncludes fibrosis, chronic inflammation and/or hydropic change of periportal hepatocytes. Control animals receiving control diets showed only occasional minimal portal damage and bile duct proliferation. The histopathology of livers of rats in groups 9, 11 and 13 (Figure 1) was no different from that seen in groups 1, 3 and 5.

^cCellular atypia is defined as morphological and cytological changes, usually focal, seen in neoplastic nodules, such changes being histologically compatible with one or more patterns of well-differentiated hepatocellular carcinomas (43-45).

total number of AHF or the volume fraction of the regenerated liver occupied by AHF.

Treatment with TCBs caused a predominance of AHF that were scored by the presence of PGST (PGST⁺) and ATP deficiency as preneoplastic markers (Figure 7), whereas PGST⁺, ATP deficiency and GGT⁺ markers were equally distributed in AHF after DEN + PB (Figure 8). TCB treatment alone did not elevate the number of AHF when compared with the control livers; however, treatment with both TCBs increased the number of AHF to a level that was greater than that of the untreated control and statistically the same as the DEN control (groups 2, 3 and 5 in Figure 1; see also Figure 9). The numbers of preneoplastic foci per liver in the DEN + 10 p.p.m. 2,5,2',5'-TCB group (group 4) or the DEN + 0.1 p.p.m. 3,4,3',4'-TCB group (group 6 in Figure 1) were not significantly different from the DEN group (group 2, Figure 1). When rats were treated with DEN followed by both TCBs, the number of AHF was dramatically greater than additive (Figure 9) ($P < 0.001$). Treatment with DEN + 100 p.p.m. 2,5,2',5'-TCB (group 10) did not cause a significant increase in the number of AHF when compared with DEN (Figure 9). Rats treated with the standard DEN + PB protocol had a significant increase in the number of AHF ($P < 0.001$, Figure 9).

Volume fraction of preneoplastic foci. When the volume fraction of AHF was analyzed, rats initiated with DEN and fed 10 p.p.m. 2,5,2',5'-TCB (group 4) exhibited statistically the same volume percentage AHF as the DEN group (group 2 in Figure 10); however, the volume of AHF in the DEN + 3,4,3',4'-TCB group (group 6) was slightly increased over that in the regenerated livers of animals receiving DEN only (group 2, Figure 10). The combination of DEN + both TCBs (group 8 in Figure 1) greatly increased the volume of the residual liver occupied by preneoplastic foci to a level that was much greater than would be expected by an additive model ($P < 0.001$; Figure 10). The group given a 10-fold greater level of 2,5,2',5'-TCB (group 10) exhibited a significant increase in the volume of the regenerated liver occupied by AHF to 7% of the liver (Figure 10). This level was statistically greater than that of rats given DEN alone but not as great as the DEN plus both TCBs group. When the livers of rats given DEN followed by 0.05% PB in the diet were examined, there was a significant increase in the volume fraction of preneoplastic foci to 20% of the total regenerated liver (group 12 in Figure 1; see Figure 10).

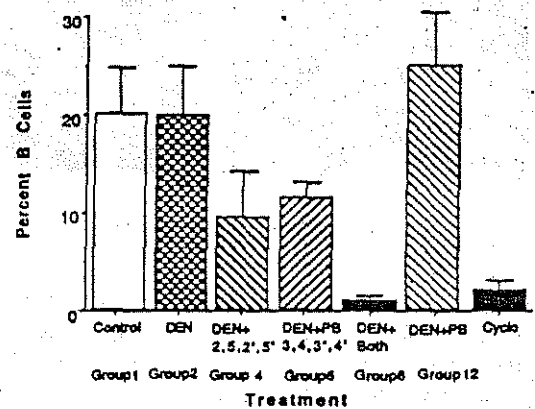


Fig. 3. Percentage of B-cells in the peripheral blood after 10 mg DEN/kg and 1 year of exposure to 0.1 p.p.m. 3,4,3',4'-TCB, 10 p.p.m. 2,5,2',5'-TCB, or a combination of 3,4,3',4'-TCB + 2,5,2',5'-TCB or to cyclophosphamide. See text and legend to Figure 2 for details and statistical conclusions. Steel and Torrie's χ -square test for additivity was used to assess significance. $P < 0.05$.

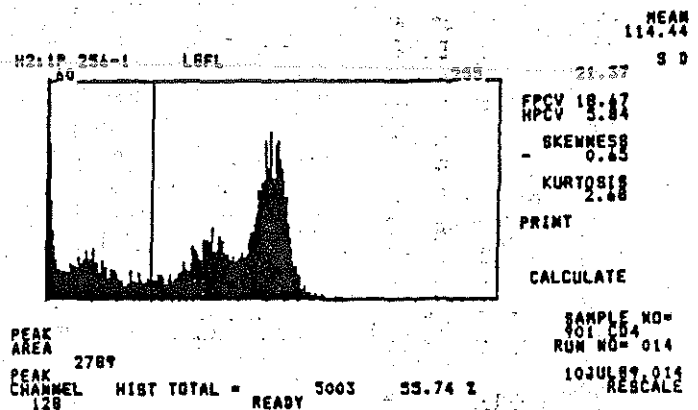


Fig. 4. Histogram of the fluorescence of T-helper cells following 1 year of exposure to 0.1 p.p.m. 3,4,3',4'-TCB + 10 p.p.m. 2,5,2',5'-TCB. Antibodies conjugated with fluorescence and generated to the CD-4 protein were used to identify the T-helper cells. See text for experimental details.

Cytochrome P450 b/e was found in $10 \pm 7\%$ of the preneoplastic foci marked by PGST or ATP of the DEN + 10 p.p.m. 2,5,2',5'-TCB, but $68 \pm 10\%$ of the AHF expressed the

10 mg DEN in trioctanoin/kg. After 1 week, the animals were randomly assigned to the treatment groups outlined in Figure 1. TCBs were dissolved in methylene chloride, added to the powdered chow, and mixed thoroughly in plastic bags. The solvent was evaporated in the hood for 24 h. Randomly selected rats were then placed on a control diet or control diet with one of the following additions: 0.1 p.p.m. 3,4,3',4'-TCB only, 10 p.p.m. 2,5,2',5'-TCB only, 0.1 p.p.m. 3,4,3',4'-TCB and 10 p.p.m. 2,5,2',5'-TCB, or 100 p.p.m. 2,5,2',5'-TCB. Another group was fed phenobarbital (PB) at a level of 0.05% in the diet as a positive control (15,16).

Analysis of lymphocytes

Rats were treated with 100 mg cyclophosphamide/kg and anesthetized with ether; blood was drawn by cardiac puncture 48 h later. The red blood cells were lysed with 2 ml hypotonic buffer (1000 ml of deionized water, 8.29 g NH₄Cl, 1.0 g KH₂CO₃, 0.372 g disodium EDTA, pH 7.4) and washed with phosphate-buffered saline. Washed lymphocytes were then mixed with fluorescein-conjugated antibodies generated against the CD-4 protein, the CD-8 protein, the 1.1 Thy protein and a general B-cell protein (17). The stained cells were then analyzed on the flow cytometer by standard methods (18). Lymphocytes of abnormal morphology were examined by scanning electron microscopy according to standard methods. Sections of the spleen were frozen on solid CO₂ and fixed in 10% buffered formalin.

Analysis of preneoplastic foci (altered hepatic foci, AHF)

The liver was removed, weighed, and sections from each liver lobe were immediately frozen on solid CO₂. Five 10- μ -thick serial sections were stained for γ -glutamyl transpeptidase (GGT), the placental form of glutathione S-transferase (PGST), canalicular ATPase (ATP), cytochrome P450 b/e, P450 *o/d* and glucose-6-phosphatase (G6P), according to the methods for staining outlined by Xu *et al.* (19). AHF were then quantitated by the procedure of Campbell *et al.* (20). Additional slices of tissue were stored in 10% formalin for histopathological analysis.

Statistics

Non-parametric Wilcoxon statistics were used to compare groups. For the determination of additivity, Steel and Torrie's χ -square test for additivity (21) was used.

Results

Lymphocyte analysis

The total number of circulating antibody-producing cells (B-cells) was reduced in the peripheral blood prepared from animals treated with 3,4,3',4'-TCB, but not from those treated with 2,5,2',5'-TCB (groups 3 and 5, Figure 2) when compared with untreated controls. The number of circulating B-cells isolated from animals treated with both TCBs was reduced by a greater than additive level ($P < 0.001$, group 7) when analyzed by flow cytometry. When DEN was included in the treatment protocol (Figure 3), the level of circulating B-cells was reduced in the 2,5,2',5'-TCB group as well as the 3,4,3',4'-TCB group ($P < 0.05$, groups 4 and 6). The level of B-cells in the group with DEN plus both TCBs (group 8) was reduced to 1%. A reduction to this level was greater than would be expected by an additive model when analyzed by the χ -square test for additivity.

There was no statistical reduction in the number of CD-4, CD-8 or Thy 1.1 cells. Although the total number of cells was the same, a population of light-staining CD-4 cells was observed by flow cytometry (Figure 4). Of the CD-4 cells, $50 \pm 8\%$ from group 7 (both TCBs) and $95 \pm 5\%$ of the samples from group 8 (DEN + both TCBs) had an abnormal population of light-staining CD-4 cells. The forward scatter of these cells was the same as that of the normal CD-4 cells, but the side scatter was different (Figure 4). A difference in the side scatter would indicate a difference in size or morphology. When these light-staining CD-4 cells were separated and examined by scanning electron microscopy, the surface morphology of all of the cells examined was distinctly different from the normal population (Figure 5). By standard methods (17), these abnormal cells were further examined for esterase activity and were determined to be negative and therefore not monocytes.

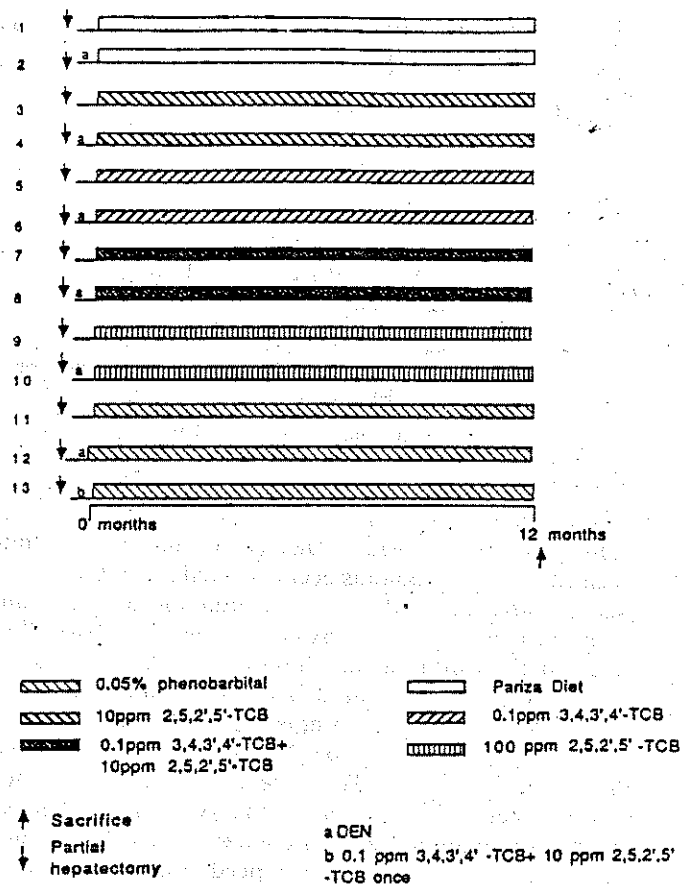


Fig. 1. Format of the protocol used for the initiation and promotion of AHF in female Sprague-Dawley rats.

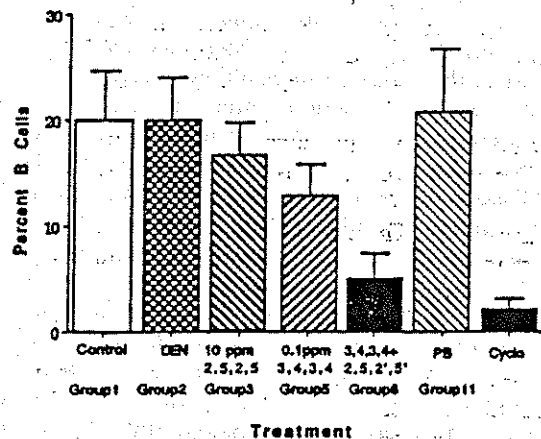


Fig. 2. Percentage of B-cells in the peripheral blood after chronic exposure to DEN alone or followed by 0.05% PB, 3,4,3',4'-TCB, 2,5,2',5'-TCB, or a combination of 3,4,3',4'-TCB + 2,5,2',5'-TCB or to cyclophosphamide. See text for details. Steel and Torrie's χ -square test for additivity (21) was used to examine an additive or greater than additive result. The conclusions of this test are given in the text. The bars above the columns indicate the standard error of the mean for analysis (1/rat in duplicate). The numbers of rats/group may be obtained from Table I.

Liver analysis

Number of preneoplastic foci. There was no statistical increase in the ratio of residual liver wt to body wt with any of the TCB treatments, but there was a significant increase in the PB and DEN + PB groups (Figure 6). A single dose of 0.1 p.p.m. 3,4,3',4'-TCB and 10 p.p.m. 2,5,2',5'-TCB did not increase the

Study of the separate and combined effects of the non-planar 2,5,2',5'- and the planar 3,4,3',4'-tetrachlorobiphenyl in liver and lymphocytes *in vivo*

Linda Sargent¹, Yvonne P. Dragan, Chris Erickson, Chris J. Laufer and Henry C. Pitot²

McArdle Laboratory for Cancer Research, Department of Oncology and the Center for Environmental Toxicology, The Medical School, University of Wisconsin, Madison, WI 53706, USA

¹Present address: Chemical Industry Institute of Toxicology, 6 Davis Drive, Research Triangle Park, NC 27709, USA

²To whom reprint requests should be sent

Polychlorinated biphenyls (PCBs) are a group of industrial chemicals that are widely distributed in the environment. Because these compounds occur as mixtures, studies of their possible interactive effects are essential for an understanding of the mechanism of the toxicity of these mixtures. For the determination of a possible interaction of the effects *in vivo* of 2,5,2',5'-tetrachlorobiphenyl (TCB) and 3,4,3',4'-TCB, rats were exposed to a single dose of diethylnitrosamine (DEN) and subsequently to 0.1 p.p.m. 3,4,3',4'-TCB and/or 10 p.p.m. 2,5,2',5'-TCB in the feed for 1 year. The two major targets of PCB toxicity, the liver and the peripheral blood, were examined after these treatments. TCB treatment after DEN exposure caused a predominance of increased placental glutathione S-transferase (PGST) and deficiencies of ATPase as preneoplastic markers in focal hepatic lesions. When 0.05% phenobarbital (PB) was administered after DEN exposure, the distribution of markers in altered hepatic foci (AHF) was essentially equal for increased PGST and γ -glutamyltranspeptidase (GGT) and for ATPase deficiency. Many of these AHF also exhibited increased P450 b/e expression. Our results demonstrated that the two PCB congeners interacted *in vivo* to produce an increase in AHF that were PGST positive and ATPase negative. PGST-positive and ATPase-negative AHF correlated best with focal areas of P450 b/e expression. The combination of the two PCBs caused a greater than additive decrease in the total number of lymphocytes and antibody-producing B-cells. Also the thymocyte-dependent T-helper cells isolated from the animals receiving the combination of TCBs demonstrated a morphologically abnormal subpopulation. The results indicate that the interaction of 2,5,2',5'-TCB and 3,4,3',4'-TCB *in vivo* induced much greater toxicity and mutagenicity in peripheral lymphocytes and hepatocytes than treatment with either congener alone.

Introduction

Polychlorinated biphenyls (PCBs*) are a group of industrial chemicals that, in the past, had diverse uses owing to their chemical stability and their miscibility in organic solvents. These

*Abbreviations: PCBs, polychlorinated biphenyls; TCB, tetrachlorobiphenyl; DEN, diethylnitrosamine; PB, phenobarbital; AHF, altered hepatic foci; GGT, γ -glutamyl transpeptidase; PGST, placental form of glutathione S-transferase; ATP, canalicular ATPase; G6P, glucose-6-phosphatase; HCC, hepatocellular carcinoma; TCDD, 2,3,7,8-tetrachlorodibenzo-p-dioxin; HCB, hexachlorobiphenyl.

properties resulted in the use of PCBs as hydraulic fluids, plasticizers, adhesives, heat transfer fluids, wax extenders, dedusting agents, organic diluents, lubricants, flame retardants and as dielectric fluids in capacitors and transformers (1). The advantages that made PCBs such a versatile industrial chemical proved to be the source of their problem in the environment. Traces of PCBs have been found in environmental samples world-wide (2,3). Analyses of human breast milk, blood and adipose tissue have demonstrated that most individuals have been exposed to PCBs (2,3). The primary route of human exposure is through oral ingestion of contaminated products.

Technical mixtures of PCBs contain a combination of planar and non-planar congeners. The planar congeners bind to the Ah receptor, induce cytochrome P450 c and P450 d (4-7), and cause a cascade of events primarily in the liver and immune cells, including weight loss, thymic atrophy, decreased spleen weights (8), reduction of circulating lymphocytes of both the bursae and thymic cell populations (9-11), hepatomegaly, and subcapsular and midzonal hepatic necrosis. They are also potent promoters of the growth of preneoplastic hepatic foci (12). The non-planar congeners are less toxic, have a low affinity for the Ah receptor, and induce P450 b/e. The non-planar congeners cause hepatic enlargement and are relatively weak promoting agents in hepatocarcinogenesis (12,13). They do not cause thymic atrophy or reduction in immune function (5,6,14).

Planar and non-planar congeners occur as mixtures, yet there are few studies which have examined the potency of specific combinations of PCB congeners. The planar 3,4,3',4'-tetrachlorobiphenyl (TCB) and the non-planar 2,5,2',5'-TCB are found in the Aroclor mixtures 1254, 1248 and 1242. The ratio of the concentration of these two congeners in the major Aroclors was used to determine the concentration ratio for this study. In addition, we chose to use low-level, environmentally relevant doses of these TCBs in order to assess the potency of the combination for the determination of doses in this experiment. The sample of Aroclor that was used as a standard contained 0.002 μ g of 3,4,3',4'-TCB/ml and 0.2 μ g of 2,5,2',5'-TCB/ml. Hepatocytes and lymphocytes were chosen as target cells to study a possible superadditive toxicity and promotion potency of the combination of the planar and the non-planar TCBs, since these two target cell types are among the most sensitive to PCB toxicity.

Materials and methods

Chemicals

The Pariza purified diet was purchased from Teklad (Madison, WI). Diethylnitrosamine (DEN) was obtained from the Eastman Kodak Co. (Rochester, NY). 3,4,3',4'-TCB was purchased from Ultra Scientific (Hope, RI) and 2,5,2',5'-TCB was a gift from Dr James Miller (McArdle Laboratory, Madison, WI). All of the antibodies used for immunohistochemistry were obtained from Bioproducts for Science Inc. (Indianapolis, IN).

Animals and treatment protocol

Female Sprague-Dawley rats (Harlan Sprague Dawley, Madison, WI) weighing an average of 90 g were housed in wire mesh cages and fed the Pariza diet (30% casein, 5% corn oil, 10% partially hydrogenated corn oil, 40% sucrose, 15% cornstarch) and water *ad libitum*. A 70% partial hepatectomy was performed under ether anesthesia and 24 h later 50% of the animals were intubated with

DOSE RESPONSE RELATIONSHIPS FOR CHRONIC EXPOSURE TO 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (TCDD) IN A RAT LIVER TUMOR PROMOTION MODEL: 1. RELATIONSHIPS OF TCDD TISSUE CONCENTRATIONS TO SERUM CLINICAL CHEMISTRY, CELL PROLIFERATION, AND PRENEOPLASTIC FOCI. G Clark, A Tritscher, Z McCoy, C Portier, M Thompson, R Wilson, J Foley, R Maronpot, T Goldsworthy, W Greenlee, and G Luder. National Institute of Environmental Health Sciences, Research Triangle Park, NC and ¹Chemical Industry Institute of Toxicology, Research Triangle Park, NC.

One of the important issues in a risk assessment for exposure to dioxins is the pharmacokinetic distribution of TCDD in a long term chronic exposure regimen and the biological responses associated with a potential carcinogenic outcome. A specific cytoplasmic binding protein, the Ah receptor, is generally thought to mediate most of the biological responses to TCDD including its action as a tumor promoter. We have used a rat liver tumor promotion model to investigate biochemical responses that may be associated with promotion of carcinogenesis. In previous studies we have found that alterations of hepatic cell proliferation and the appearance of enzyme altered foci (γ -glutamyl transpeptidase and glutathione S-transferase-positive foci) correlate with liver tumor formation but that the ovaries are necessary for the expression of these effects. In the current study we are investigating dose response relationships in female Sprague-Dawley rats with an initiating dose of 175 mg/kg DEN and biweekly exposure to TCDD for 30 weeks to give doses equivalent to 3.5, 10.7, 35.7, and 125 ng/kg/day TCDD. A linear distribution of TCDD in livers of exposed animals was found. The mean liver concentration of TCDD was 19.9 ppb at 125 ng/kg/day and the mean liver concentration was 0.5 ppb at 3.5 ng/kg/day. In serum samples from the rats exposed to 125 ng/kg/day the TCDD concentration was 23.9 ppt while the concentration at the lowest dose was 8 ppt. Several serum clinical chemistry parameters were measured including alkaline phosphatase, glucose, alanine transaminase, total cholesterol, triglycerides, sorbitol dehydrogenase, 5' nucleotidase, and total bile acids. A significant dose effect for TCDD exposure was determined for serum alkaline phosphatase, 5' nucleotidase activities and on the levels of serum cholesterol. We are in the process of analyzing cell proliferation in livers from these animals by incorporation of bromodeoxyuridine into newly-formed cells and immunohistochemical analysis. We are also quantifying γ -glutamyl transpeptidase and placental glutathione S-transferase positive foci as indicators of preneoplastic lesions. These parameters will be correlated with the applied dose, the tissue specific dose, and the levels of occupied Ah receptors. We hope to determine a) what is the most sensitive biochemical response to TCDD exposure and b) which parameter correlates with carcinogenicity. These data will be useful in the development of mechanistic models for dioxin risk assessment. (Funding for TCDD analyses provided by the American Paper Institute).

DOSE RESPONSE RELATIONSHIPS FOR CHRONIC EXPOSURE TO 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (TCDD) IN A RAT TUMOR PROMOTION MODEL: 2. QUANTIFICATION AND IMMUNOLocalIZATION OF CYTOCHROMES P450c(1A1) AND P450d(1A2) IN THE LIVER. A Tritscher, G Clark, Z McCoy, C Portler, W Greenlee, J Goldstein, and G Lucier. National Institute of Environmental Health Sciences, Research Triangle Park, NC.

TCDD and its structural analogs produce a broad spectrum of biochemical and toxic effects in animals and humans. The mechanisms responsible for these effects involve interactions with the Ah receptor but many of the steps necessary for biological response remain unknown. One of the troublesome knowledge gaps that causes uncertainty in risk assessments for TCDD is the lack of adequate dose-response relationships following chronic exposure to TCDD. One of the most sensitive responses to TCDD and its structural analogs is the induction of specific isozymes of cytochrome P450 (CYP1A1 and CYP1A2). CYP1A1 is induced in many tissues whereas CYP1A2 is induced only in liver. We have employed a two-stage model for hepatocarcinogenesis in female Sprague-Dawley rats to evaluate dose-response relationships for CYP1A1 and CYP1A2. A single dose of diethylnitrosamine was used as the initiating agent followed by biweekly gavage of TCDD at doses equivalent to 3.5, 10, 35 and 125 ng/kg/day for 30 weeks. CYP1A1 and CYP1A2 were quantified in liver microsomes from control and treated rats by immunoassay. Data revealed a maximum induction of CYP1A2 of 10-fold and induction was nearly 3-fold at the 3.5 ng/kg/day dose. ← The no detectable effect for 1A2 induction was estimated to be 0.1 to 0.3 TCDD ng/kg/day. A chronic dosing experiment is in progress to determine if this is an accurate estimate of the no detectable effect. Interestingly, TCDD-mediated induction of 1A2 appeared to occur at lower doses in DEN-initiated rats compared to non-initiated rats. Also, CYP1A2 induction appeared to be a slightly more sensitive marker of TCDD exposure than CYP1A1 in our rat liver tumor promotion model. We also analyzed liver TCDD concentrations by GC-MS. These data revealed a linear relationship between administered dose and TCDD liver concentrations throughout the entire dose range of our study. Therefore, induction of 1A2 does not enhance TCDD retention in liver, a hypothesis that had been proposed because 1A2 is a binding protein for TCDD. We also used immunocytochemical techniques to analyze the pattern of CYP1A1 and CYP1A2 distribution in livers of control and TCDD-treated rats. 1A2 was localized primarily in the centrilobular region with small amounts in the midzonal and periportal regions. Induction by TCDD increases the number of cells containing detectable amounts of 1A2 but not the intensity of staining of cells constitutively expressing this cytochrome. Localization patterns, in induced rats, were similar for 1A1 and 1A2. Taken together, these studies are characterizing dose response relationships for CYP1A1 and CYP1A2 that represent characteristic Ah receptor dependent responses to TCDD exposure. (Funding for TCDD analyses provided by the American Paper Institute.

Chlorinated Dioxins and Related Compounds

DIOXIN '91

cc Steve
CR
By CA
JH N

September 23-27, 1991

Conference Information

School of Public Health
Office of Continuing Education
The University of North Carolina
at Chapel Hill
CB# 8165, Miller Hall
Chapel Hill, NC 27599-8165
Phone: 919/966-1104
Fax: 919/966-7141

Organizing Committee

Terri Damstra, Chair
National Institute of Environmental
Health Sciences

Linda Birnbaum
Health Effects Research Laboratory
U.S. Environmental Protection
Agency

M. Judith Charles
Department of Environmental Sciences and
Engineering
The University of North Carolina at
Chapel Hill

Chris Corton
Chemical Industry Institute of
Toxicology

Richard Dideriksen
School of Public Health
The University of North Carolina at
Chapel Hill

William Greenlee
National Institute of
Environmental Health Sciences

O. Hutzinger
International Institute for Environmental
Information and Communication

George Lucier
National Institute of Environmental
Health Sciences

Memo

To: Conference Participants Who Plan to Submit Papers

From: Sharon Johnson Wills
Program Assistant

Date: February 10, 1991

Re: Abstract Format Instructions

The Organizing Committee of Dioxin '91 invites you to submit your abstract for the 11th International Symposium on Chlorinated Dioxins and Related Compounds. The conference will be held in Research Triangle Park, North Carolina, Sept. 23-27, 1991. Enclosed please find one instruction sheet and two forms for submitting your abstract. Also enclosed is an acknowledgment card that you should send back with your completed package. Fill in the lines marked "title" and "author" and return it with your abstract package to the Office of Continuing Education. I will return the card to you to acknowledge receipt of your abstract.

Please read the instructions carefully and take note of all mailing advisories so that we may include your abstract in this year's program. Remember that all abstracts must be received no later than April 1, 1991. Abstracts received after this date will not be considered for acceptance, published or printed.

If you have any questions or concerns, please call or write.

P.S. A complete brochure describing this program will be mailed to you in April. To register for Dioxin '91 before that time, please call me at 919/966-1104.

other correction used by EPA.¹

If the revised tumor pathology criteria are applied, eliminating liver hyperplasias, but all other standard EPA assumptions are employed, the calculated rat potency is reduced by only a factor of two to three from the current value. Again, ChemRisk's calculation of a new dioxin carcinogenic potency factor is indefensible.

Conclusion

A proposed acceptable daily dose for 2,3,7,8-TCDD is claimed to be based on new science regarding the classification of tumors. However, if this change alone is made, the "acceptable" dose of dioxin would only be altered by a factor of two to three. ChemRisk's proposed reduction by a factor of as much as a thousand is fundamentally based on scientifically indefensible changes in a number of other unrelated assumptions.

This series of events shows many of the problems with quantitative risk assessment. There is uncertainty about even the most basic questions such as the classification of tumors in laboratory animals. A large number of assumptions are required, each of which must be independently justified. Because of the uncertainty and the number of assumptions, it may be possible, in the absence of checks and balances, to construct nearly any result. ■

References and Notes

1. U.S. Environmental Protection Agency. 1985. *Health assessment document for polychlorinated dibenzo-p-dioxins*. EPA/600/8-84/014F. Washington, D.C.: Office of Health and Environmental Assessment.
2. U.S. Environmental Protection Agency. 1987. *National dioxin study*. EPA/530-SW-87-025. Washington, D.C.: Office of Solid Waste and Emergency Response.
3. State Water Resources Control Board. 1988. *Chlorinated dibenzo-p-dioxin and dibenzofuran contamination in California from chlorophenol wood preservative use*. Report 88-5WQ. Sacramento, CA: Division of Water Quality.
4. Keenan, R., R. Wenning, A. Parsons. 1989. *Sensitivity analysis for dioxin risk assessment and implications for determining acceptable daily exposure*: Executive summary. Portland, ME.: ChemRisk, October 20.
5. Keenan, R. Letter to Dr. R. Loehr, Chair, Executive Committee, Science Advisory Board, U.S. Environmental Protection Agency. March 20, 1990.
6. U.S. Environmental Protection Agency.

ton, D.C.: Office of Water Regulations and Standards. May.

7. Where people can consume both fish and water, the water quality standard is computed as:

$$C = (RsD \cdot BW) / ((FC \cdot BCF) \cdot WC)$$

RsD = risk specific dose ("acceptable" dose at a given risk level)

BW = human body weight

FC = fish consumption

BCF = bioconcentration factor, the ratio between the concentration of the compound found in the fish and the concentration in water.

WC = water consumption rate by humans (negligible when BCF is large).

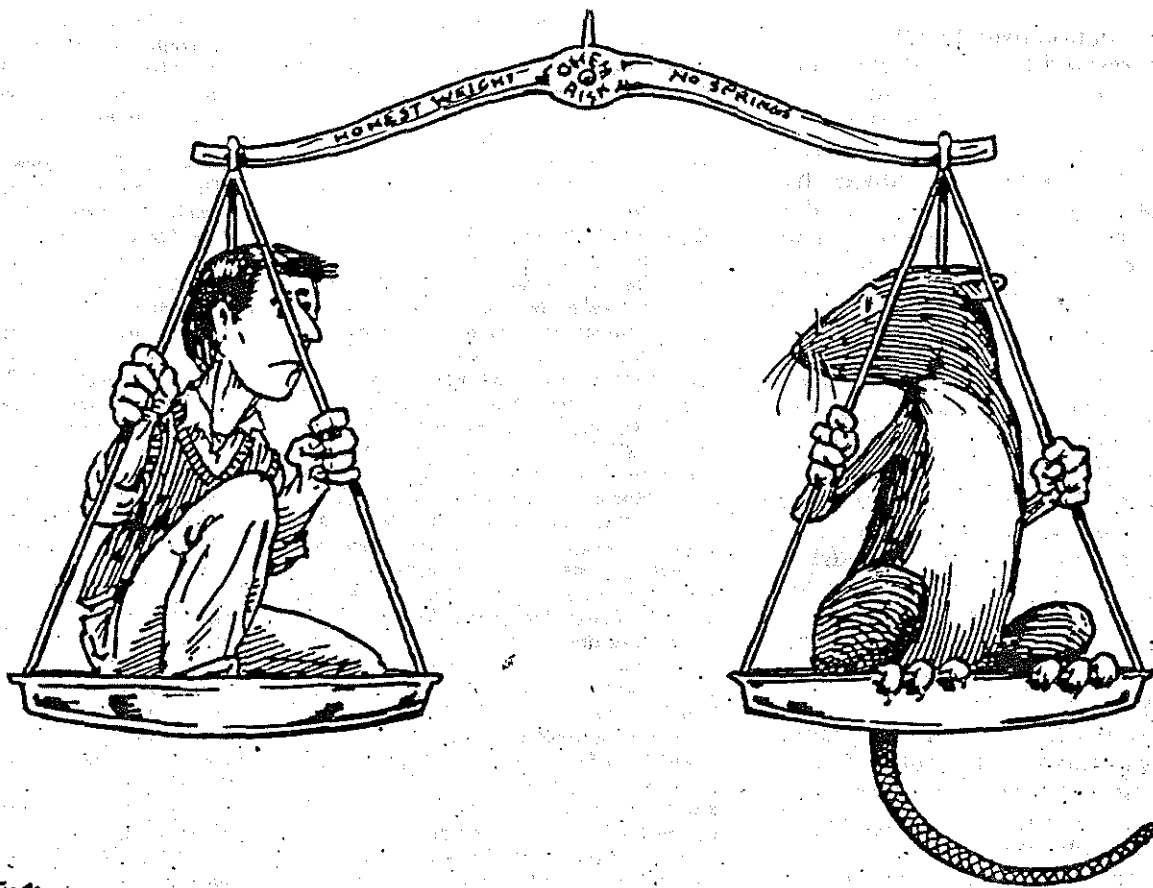
The current EPA water quality standard for 2,3,7,8-TCDD assumes a fish consumption rate of 6.5 grams per day (0.23 oz.) and a bioconcentration factor of 5000.^{6,24} Both of these factors are low. New data indicate that sport fishermen can consume 30 grams per day of fish while subsistence fishermen may consume 140 grams per day.^{24,28} These values are about five and twenty two times higher than the current EPA value. Recent studies of the bioconcentration of 2,3,7,8-TCDD have found values from 39,000 to 140,000.^{29,30} Thus, even if the RsD for 2,3,7,8-TCDD was raised by a factor of two to three to account for changes in tumor classification, a water quality standard tens of hundreds of time lower could be constructed.

Furthermore, water quality standards are set compound by compound, ignoring the fact that compounds closely related to 2,3,7,8-TCDD—such as 2,3,7,8-tetrachlorodibenzofuran, also emitted by pulp and paper mills that bleach with chlorine—are added together in other regulatory contexts, after adjusting for relative potency using the 2,3,7,8-TCDD equivalence methodology.

8. Gladwell, M. 1990. Scientists temper views on cancer-causing potential of dioxin. *Washington Post*, May 31, p. A3.
9. Sauer, R. and PATHCO, Inc. 1990. *Pathology Working Group 2,3,7,8-tetrachlorodibenzo-p-dioxin in Sprague-Dawley Rats*. 10075 Tyler Place #16, Ijamsville, MD 21754. March 13.
10. Maronpot, R., C. Montgomery, G. Boorman, and E. McConnell. 1986. *National Toxicology Program nomenclature for hepatoproliferative lesions of rats*. *Toxicologic Pathology* 14(2): 263-273.
11. Agent Orange Scientific Task Force. 1990. *Human health effects associated with exposure to herbicides and/or their associated contaminants - chlorinated dioxins*. Washington, D.C.: National Veterans Legal Services Project.
12. Rogan, W., B. Gladen, C. Hsu, Y. Chen, and H. Ko. 1990. *Yucheng: Studies in children*. Presented at Dioxin '90, The Tenth International Meeting. Bayreuth, Germany.
13. Jacobson, J., S. Jacobson, and H. Humphrey. 1990. *Effects of in utero exposure to polychlorinated biphenyls and related contaminants on cognitive functioning in young children*. *J. Pediatrics* 116: 38-45.
14. Rohleder, F. 1989. *Dioxins and cancer*

posium on Chlorinated Dioxins and Related Compounds, Toronto, Ontario, Sept. 17-22.

15. Van Strum, C. and P. Merrell. 1990. *Dioxin human health damage studies: Damaged data?* *Journal of Pesticide Reform* 10(1): 8-12.
16. Zober, A., P. Messerer, and P. Huber. 1988. *Thirty-four-year mortality follow-up of BAWAG employees exposed to 2,3,7,8-TCDD after the 1953 accident*. *International Archives of Occupational and Environmental Health* 62: 139-157.
17. Fingerhut, M., et al. (1991). *Cancer mortality in workers exposed to 2,3,7,8-tetrachlorodibenzo-p-dioxin*. *New England Journal of Medicine* 324(4): 212-218.
18. "EPA likely to upgrade dioxin cancer classification to reflect new data." *Inside EPA*. February 1, 1991. p.4.
19. Jenkins, C. 1991. *U.S. Environmental Protection Agency Memorandum*. January 24.
20. Kociba, R., D. Keyes, J. Beyer, R. Carreon, C. Wade, D. Dittember, R. Kalnins, L. Frauson, C. Park, S. Barnard, R. Hummel, and C. Humiston. 1978. *Results of a two-year chronic toxicity and oncogenicity study of 2,3,7,8-tetrachlorodibenzo-p-dioxin in rats*. *Toxicology and Applied Pharmacology* 46: 279-303.
21. U.S. Environmental Protection Agency. 1986. *Guidelines for carcinogen risk assessment*. *Federal Register* 51(185): 33991. September 24.
22. U.S. Environmental Protection Agency. 1988. *A cancer risk-specific dose estimate for 2,3,7,8-TCDD: Draft EPA/600/6-88/007Aa*. June. pp. 49-50.
23. Goldstein, B., N. Kim. 1989. *Letter from the Chair and Co-Chair of the Ad Hoc Dioxin Panel to Dr. R. Loehr, Chair, Science Advisory Board Executive Committee, U.S. Environmental Protection Agency*. November 28.
24. U.S. Environmental Protection Agency. 1990. *EPA's position on Georgia's adoption of a dioxin water quality standard*. Region IV. March.
25. Bayard, S. 1988. *Quantitative implications of the use of different extrapolation procedures for low-dose cancer risk estimates from exposure to 2,3,7,8-TCDD*. Appendix A of reference 22.
26. Alsen-Hinrichs, C. Department of Toxicology, University of Kiel School of Medicine, Kiel, Germany. *Letter to the Washington Post* (unpublished). June 21, 1990.
27. Squire, R. 1990. *Letter to Dr. Robert Michaels acknowledging the request of November 28, 1989*. January 8.
28. U.S. Environmental Protection Agency (1989). *Exposure factors handbook*. Versar, Inc. EPA 600/8-89-043. Washington, D.C.: EPA.
29. Mehrle, P., et al. 1988. *Toxicity and bioconcentration of 2,3,7,8-tetrachlorodibenzo-p-dioxin and 2,3,7,8-tetrachlorodibenzofuran in rainbow trout*. *Environ. Toxicol. Chem.* 7: 47-62.
30. Cook, P., A. Batterman, and B. Butterworth. 1990. *Laboratory study of TCDD bioaccumulation by lake trout from Lake Ontario sediments, food chain and water*. Duluth, MN: U.S. Environmental Protection Agency Environmental Research Laboratory.



Jim Carpenter

factor of about five.

ChemRisk argues that the use of the dose per body weight scaling factor is "more biologically relevant" because 2,3,7,8-TCDD is itself the active compound rather than any metabolite as is common with many carcinogens. EPA has disagreed with this line of reasoning in general,²⁵ but the case against body weight scaling is even stronger for 2,3,7,8-TCDD.

Since EPA's 1985 dioxin potency estimate, 2,3,7,8-TCDD half-life in humans has been determined to be 5-10 years, much longer than previously thought. In rats, the half-life of 2,3,7,8-TCDD is only about one month. Taking into account differences in tissue distribution, a scientist with EPA's Carcinogen Assessment Group estimated a scaling factor for the liver of as high as 37, much higher than ChemRisk's body weight scaling factor of one as well as EPA's surface area scaling factor of 5.38.²⁵ ChemRisk's reliance on the body weight scaling factor is not supportable.

• **Cancer Potency in Rats:** EPA's 1985 computation of dioxin potency was based on the occurrence in the

1978 rat study of carcinomas (cancerous tumors) and neoplastic nodules (lesions which may develop into cancerous tumors) in the liver, as well as tumors in other organs where the increase over control animals was statistically significant. In 1986, researchers proposed dividing neoplastic nodules into two groups: hepatocellular hyperplasia (a noncancerous proliferation of liver cells caused by toxicity) and hepatocellular adenomas (benign liver tumors).¹⁰ This change has been questioned by some toxicologists.²⁶

ChemRisk used the new classification system to argue in 1989 that the EPA's 1985 analysis was incorrect.⁴

At about the same time, Dr. Squire, a consulting pathologist involved in the original analysis of the female rat cancer data, was asked to re-examine the in conjunction with the setting of a water quality standard for Maine.²⁷ (Squire was involved earlier in a controversy over dioxin contaminants of pentachlorophenol; see article beginning on p. 4). After an initial review of the rat data, Dr. Squire helped convene a group of pathologists to re-ex-

amine the liver tissue slides from the experiment using the new classification system.

During this re-evaluation, in which "consensus" was defined as agreement by four out of seven pathologists (not all votes were unanimous), the group identified fewer carcinomas as well as fewer total tumors (carcinomas plus adenomas) than EPA's earlier analyses. The group concluded that because "the tumors were predominantly benign and usually associated with lesions of hepatic [liver] toxicity" the rat study demonstrated "a weak oncogenic [cancer-causing] effect of TCDD."⁹ The implication of this controversial conclusion is that liver toxicity somehow caused or magnified the carcinogenic response.

ChemRisk used these results to calculate a new potency factor for 2,3,7,8-TCDD in rats, but counted only carcinomas in the liver (the primary target organ in this animal). They ignored carcinomas in other tissues as well as all adenomas, benign tumors that may progress into carcinomas. Both omissions are contrary to EPA guidelines for carcinogen risk assessment.²¹

ten uses an acceptable lifetime risk of cancer of one case in a million (10^{-6}).

Based on this policy, the acceptable daily dose of a chemical is established by dividing the acceptable risk level by the "potency" of the compound. EPA calls such values risk specific doses (RsD). The potency is the quantitative estimate of the strength of the carcinogen. The more potent a chemical is, the smaller the dose that is required to pose a certain level of risk.

For dioxin, as with the overwhelming majority of toxic chemicals, there are insufficient human data to establish a potency. (The new study cancer among chemical workers¹⁷ may, however, prove sufficient.) Consequently, dioxin's potency is based on laboratory experiments with animals. The current estimate for 2,3,7,8-TCDD¹ was based on a 1978 experiment on female rats, the most sensitive sex and species tested.²⁰

EPA projected from the number of tumors found in animals at experimental doses to effects at the lower doses that people might encounter using a standard mathematical technique, the linear multistage model. This model assumes that the carcinogen has no threshold and that effects at low doses are linear, i.e., directly proportional to dose.

Finally, the potency in humans is estimated by multiplying the animal value by a "scaling factor." This adjusts for differences between the experimental animal and humans. For dioxin, EPA employed the default "surface area" scaling factor, since many differences between animals and humans (e.g., metabolism) depend on relative surface area.^{1,21}

The 1988 Attempt to Downgrade Dioxin

In 1988, a proposal was made by EPA's Dioxin Workgroup to decrease the carcinogenic potency of 2,3,7,8-TCDD by a factor of sixteen. The Workgroup argued that dioxin might cause cancer through several mechanisms rather than being simply a complete carcinogen (the basis of the 1985 estimate). It might, therefore, be a less potent cancer-causing

than previously thought. The Workgroup concluded that there was "no definitive scientific basis" for determining how much less potent dioxin might be.²²

They noted that other agencies (the Center for Disease Control, the Food and Drug Administration) as well as other countries have less stringent "acceptable" levels of dioxin. They argued that "for strictly policy purposes, there is great benefit in federal agencies adopting consistent positions in the absence of compelling scientific information" and that an order of magnitude (factor of ten) estimate conveys the uncertainty involved. Based on this somewhat arbitrary logic, the Working Group recommended increasing the "acceptable" level (RsD) from 0.006 picograms (one picogram is one trillionth of a gram) per kilogram per day (pg/kg/day) to 0.1 pg/kg/day.

In their review of this proposal, EPA's Science Advisory Panel acknowledged some criticisms of the application of the linear multistage model to dioxin. However, they rejected the Workgroup's proposal, stating that "there is no reason to necessarily believe that a new mechanism model would lead to a relaxation of the risk specific dose for 2,3,7,8-TCDD induced cancer...The Panel therefore finds no scientific basis at this time for the proposed change."²³

Acceptable Doses of Dioxin: ChemRisk versus EPA

At about the same time that the Science Advisory Panel was rejecting the 1988 case for increasing the "acceptable" risk of dioxin by a factor of sixteen, ChemRisk's new proposal supported an increase by as much as

a factor of one thousand.²⁴ Three main factors are used by ChemRisk and EPA in their respective dioxin computations (see Table 1):

"ChemRisk selects an "acceptable" risk of 10^{-5} . Since the level of acceptable risk is a question of policy, not science, ChemRisk's choice of this factor is arbitrary."

- **"Acceptable" Lifetime Cancer Risk:** For water quality standards, EPA recommends an "acceptable" lifetime cancer risk ranging from one in ten million (10^{-7}) to one in one hundred thousand (10^{-5}). However, one in one million (10^{-6}) is both the default and most commonly used value.^{6,24} ChemRisk selects an "acceptable" risk of 10^{-5} . Since the level of acceptable risk is a question of policy, not science, ChemRisk's choice of this factor is arbitrary.

- **Interspecies Scaling Factor:** ChemRisk uses a body weight scaling factor to extrapolate from rats to humans. Since dose is commonly expressed as an amount per kilogram of body weight, ChemRisk's approach assumes that humans and rats are equally sensitive. EPA's surface area scaling factor assumes that humans will be more sensitive than rats per unit body weight by a

Table 1
Constructing an "Acceptable" Dose of Dioxin

	USEPA	ChemRisk	Factor
1. Cancer potency in rats (mg/kg/day) ¹ (95% upper-bound estimate with linear multi-stage model)	29000	21500	1.95
2. Scaling factor, rat to human (surface area)	5.38	5.38	1
3. "Acceptable" Lifetime Cancer Risk	10^{-6}	10^{-5}	10
4. Risk-Specific Dose of 2,3,7,8-TCDD (pg/kg/day)	0.006	6.74	1040
a. Factor by which ChemRisk is less stringent			
b. This factor would be 2-3 if the only change was the reclassification of tumors			
c. One in a million is a default and common value for water quality standards. ^{6,25}			
d. An earlier draft by ChemRisk proposed an acceptable dose of 2.5 pg/kg/day. ⁴			

Note: RsD = (acceptable risk)/(rat potency * scaling factor)

Downgrading Dioxin's Cancer Risk: Where's the Science?

By Tom Webster

Some of the concerns about the toxicity of the wood preservative pentachlorophenol have resulted because of its contamination with dioxins and furans. During manufacturing, pentachlorophenol is contaminated with several members of this family of compounds, with hexadioxins being most abundant.¹ 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD, commonly called dioxin), the most toxic dioxin, has been found in commercial pentachlorophenol formulations¹ and is often found in the soil and waste products from wood treatment plants.^{2,3} This article discusses recent attempts to weaken regulatory standards for 2,3,7,8-TCDD.

-Ed.

The pulp and paper industry and certain consultants are once again attempting to relax the regulatory standards for dioxin. The consulting company ChemRisk has proposed an increase in the so-called "acceptable" dose of 2,3,7,8-TCDD by a factor as large as one thousand.^{4,5} Many states are currently setting water quality standards for dioxin,⁶ a regulation that depends on the "acceptable" dose.⁷

Despite assertions that the proposed change is based on new scientific evidence showing that dioxin "may be far less dangerous than previously imagined,"⁸ the new information is actually a reinterpretation of the 1978 rat experiment that forms the basis for the U.S. Environmental Protection Agency's (EPA's) current estimate of dioxin's ability to cause cancer. In this reanalysis, a group of pathologists voted, according to a new set of

Tom Webster is a researcher with the Center for the Biology of Natural Systems (CBNS) of Queens College. He is currently working on a project for Greenpeace concerning chlorinated compounds.

CBNS, Queens College, City University of New York, Flushing, NY 11367; (718) 670-4180.

guidelines, on the classification of tumors found in the test animals.⁹

However, if all other assumptions are left unchanged, recounting the tumors according to the revised rules¹⁰ would result in an "acceptable" daily dioxin dose that is only two to three times larger than the current estimate. This is an insignificant change given the uncertainty in risk assessment. 2,3,7,8-TCDD is currently rated as millions of times more carcinogenic than many other compounds.

"Indeed, new scientific evidence on the amount of fish people consume, the degree to which dioxin is concentrated in fish, and the toxic equivalencies of other dioxins and furans supports stronger, not weaker, dioxin standards."

The much larger change proposed by ChemRisk was derived by altering a number of other assumptions without proper justification. Indeed, new scientific evidence on the amount of fish people consume, the degree to which dioxin is concentrated in fish, and the toxic equivalencies of other dioxins and furans (JPR 10(2):23-27) supports stronger, not weaker, dioxin standards.⁷

Human Health Effects Controversy

This episode is neither the first nor last attempt to downgrade or dismiss the toxicity of dioxin. Perhaps the best known and continuing controversy surrounds Agent Orange. 2,3,7,8-TCDD was a contaminant in the herbicide 2,4,5-T, a component of Agent Orange,

which was sprayed in parts of the United States as well as in Vietnam.

Despite the claim by some that the only long-term effect of dioxin on humans is chloracne, a serious skin disorder, the compound has been hypothesized to cause a number of other health effects in humans. Several recent epidemiological studies support this position. The Agent Orange Scientific Task Force¹¹ linked phenoxyacetic acid herbicides (such as Agent Orange) and their dioxin contaminants to a number of diseases including certain cancers. Dioxin's close chemical relatives PCBs and dibenzofurans may cause birth defects and learning/behavioral changes in the children of exposed women.^{12,13} Certain key earlier studies that found no increase in cancer in chemical workers exposed to dioxin are faulty or possibly even fraudulent,^{14,15} a charge now under investigation by EPA. Recent studies of German and American chemical workers exposed to dioxin found statistically significant increases in cancer rates.^{16,17}

EPA rates cancer-causing compounds qualitatively (how good is the evidence for cancer causation in humans?) and quantitatively (how much cancer is caused by a given dose?). As a result of the recent epidemiology, it is likely that EPA will upgrade the qualitative standing of 2,3,7,8-TCDD to a Class B1 probable human carcinogen (limited human data and sufficient animal data),¹⁸ an action with important regulatory ramifications.¹⁹

Constructing an "Acceptable" Daily Intake of Dioxin

EPA typically assumes that cancer-causing agents have no threshold, meaning that any amount of exposure can cause damage. Some people argue that there is no acceptable exposure for dioxin, an unintentional chemical by-product with no use or benefit, and that the goal should be zero exposure to this compound. EPA, however, has stated that some level of risk is "acceptable," a decision that is a matter of policy, not science. In setting ambi-

Figure 1 : Linear Plot

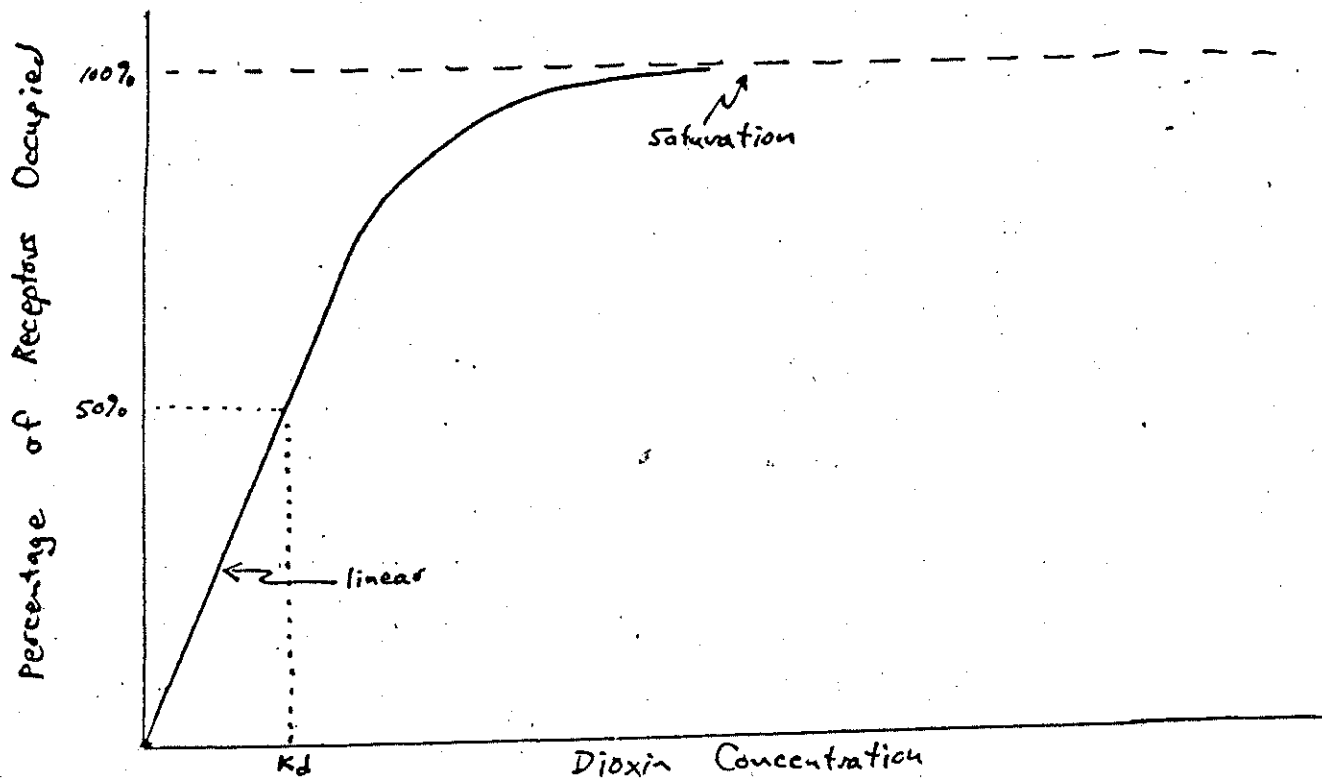
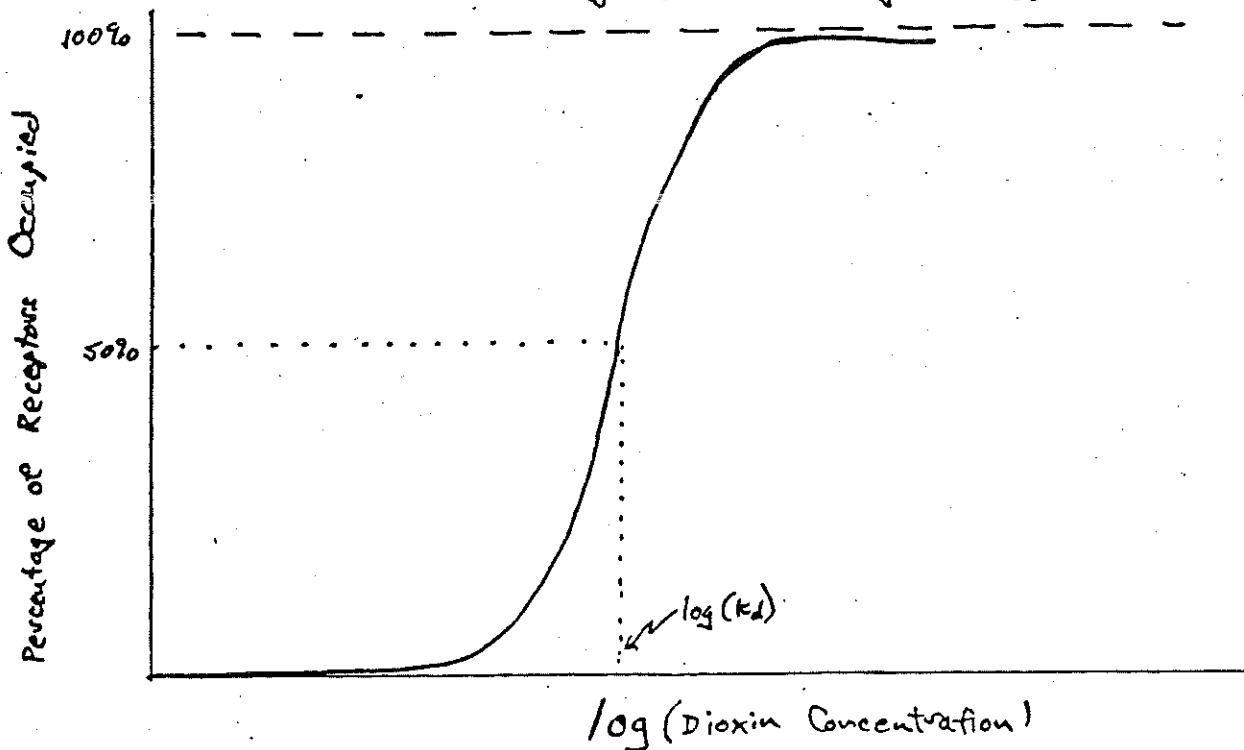


Figure 2 : Log-Linear Plot



all toxicity is mediated by the Ah receptor binding; 2) induction of P450IA1 (AHH activity) is the most sensitive response of this system; 3) no effect occurs until one can measure an increase in enzyme activity. This defines a "practical" threshold that one can use to determine no-effect levels, etc.

In response to this last argument (briefly), enzyme induction may be the most sensitive response, but we don't really know. Also, lack of measurable activity doesn't necessarily mean no activity. Ability to measure a response is determined by many things including the sensitivity of the assay, the statistical power of the experiment, etc. In addition, 2,3,7,8-TCDD has a very long lifetime in the human body. Finally, the already existing body-burden of dioxin-like compounds in humans and other animals needs to be taken into consideration when examining such threshold models.

References

- (1) Roberts, L. (1991a). Dioxin Risks Revisited. Science 251: 624-626. February 8.
Roberts, L. (1991b). Flap Erupts Over Dioxin Meeting. Science 251: 866-867. February 22.
- (2) Birnbaum, L. (1990). Memo to E. Bretthauer (EPA-ORD) regarding Consensus at Banbury Dioxin Conference. October 31.

OTHER DIOXIN-LIKE COMPOUNDS
slope.

For a high concentration of 2,3,7,8-TCDD, the curve saturates. One can't produce more receptor-dioxin complexes than there are receptors:

$$[LR] = R_0 \quad \text{for } [L] \gg K_D \quad (5)$$

(We'll ignore for now so-called "supermaximal" induction as well as circumstances which alter the number of receptors).

Finally, note that when the concentration of a compound equals its K_D , the number of bound receptors is equal to one-half the total number of receptors.

$$[LR] = R_0/2 \quad \text{for } [L] = K_D \quad (6)$$

(3) Analysis of the Science graph

When equation (3) is plotted on normal graph paper it looks like my Figure 1, linear at low levels of 2,3,7,8-TCDD--the concentration of receptor-ligand complexes directly proportional to the concentration of ligand--and plateauing--at 100% bound receptor--at high levels of 2,3,7,8-TCDD.

When the same equation is replotted using the logarithm of the concentration of 2,3,7,8-TCDD, the graph looks like Figure 2, the same S-shaped curve seen in Science. Note that the horizontal axis in the Science graph gives concentration of 2,3,7,8-TCDD increasing by a factor of ten at each step; this is equivalent to using logarithms.

Finally, 50% of the receptors are shown as occupied in the Science graph when the concentration of 2,3,7,8-TCDD equals about 10^{-9} (Although not given, the units are undoubtedly the standard moles per liter). This is the old K_D value for 2,3,7,8-TCDD. Actually, recent experiments indicate that the K_D is probably even smaller, on the order of 10^{-12} to 10^{-11} moles per liter. This means that 2,3,7,8-TCDD binds Ah more tightly than previously thought.

(4) Discussion

As a result, it should be clear that the graph in Science does not by itself indicate a threshold. The S-shape of the curve is an artifact of the graphing technique. Plotted on linear axes, the equation for ligand-receptor interaction indicates that the number of occupied receptors rises linearly from zero. In other words, this response should theoretically be linear at low doses with no threshold.

What then is really going on? Clearly, there must be more to the story. I'll be writing another memo on this, but let me give a few hints.

i) There may be other compounds inside the cell which bind to Ah, albeit with less affinity, complicating the picture.

ii) Binding to the receptor is just the first step. The other steps, binding to DNA, generation of protein, action of protein, etc., might not be linear. Hence, even though the first step might be linear, the final toxic response might not be.

ii) Binding to the receptor is reversible. However, the long half-life of dioxin-like compounds and the background exposure to them diminishes the strength of this argument.

mechanism of many toxic responses is not so well understood. I'll discuss some of this in a future memo.

(2) Receptor Kinetics

If the toxicity of dioxin-like compounds is mediated by the Ah receptor, clearly we need to understand this first step. Receptor-ligand relationships are mathematically described by the Michaelis-Menten equation, a standard tool for describing enzymes. This is schematically described as:



where "R" is the unbound receptor, "L" is the ligand (molecule binding to the receptor) and "LR" is the receptor-ligand complex. k_1 and k_{-1} are, respectively, the association and dissociation rate constants. At equilibrium, we find

$$K_D = [L][R]/[LR] \quad (2)$$

$$K_D = k_{-1}/k_1$$

where the items in the brackets "[]" are concentrations and K_D is the dissociation equilibrium constant. The constant K_D tells us, in an inverse way, about the strength of the binding between the ligand and the receptor. A small K_D means the binding is strong, and thus the receptor-ligand complex is less likely to dissociate. Conversely, a large K_D means that the receptor-ligand binding is weak.

Equation (2) can be solved in terms of the amount of occupied (bound) receptor:

$$[LR] = [L]*R_0/(K_D + [L]) \quad (3)$$

where R_0 is the total amount of receptor, bound and unbound.

Equation (3) gives the relationship between the amount of 2,3,7,8-TCDD (or other ligand) and the amount of bound receptor (LR). Remember that the toxic activity of 2,3,7,8-TCDD (and other dioxin-like compounds) is thought to be associated with the concentration of dioxin-receptor complexes. We could infer a dose-response curve with two additional pieces of information: 1) the relationship between external dose (e.g., amount of exposure per day) and [L] and ii) the relationship between [LR] and toxicity.

Note that when the concentration of 2,3,7,8-TCDD is significantly less than K_D , the relationship is linear:

$$[LR] = [L]*R_0/K_D \quad \text{for } [L] \ll K_D \quad (4)$$

Indeed, this equation indicates that even one molecule of 2,3,7,8-TCDD could bind to the receptor, indicating that there may be no theoretical threshold for activity. The slope of the curve is governed by the number of Ah receptors (R_0) and the dissociation constant (K_D). Since 2,3,7,8-TCDD has a very small K_D compared to

TO: DIOXIN NEWS, 1991.

From: Tom Webster, CBNS Queens College, Flushing NY 11367

Date: 3/14/91

RE: Banbury Dioxin Model, Part 1 A Critique

A recent two article series in Science⁽¹⁾ covered the infamous Banbury conference on dioxin toxicity. The second article addresses the scandal aspect of the story, particularly the involvement of the Chlorine Institute. The first article (attached) addresses some of the scientific aspects, but does so in what I consider a rather opaque fashion.

In particular, the article shows an S-shaped graph which appears to show why dioxin has a threshold. Science indicates, using the graph, that "responses to dioxin increase slowly at first but then shoot up after passing a critical concentration."

However, all is not as simple as it seems at first. Since there has been some confusion regarding this business, I will address the graph in this memo.

(1) Background: The Ah receptor

First, a bit of background. 2,3,7,8-TCDD and other dioxin-like compounds (PCDFs, co-planar PCBs, chlorinated naphthalenes, etc.) are generally thought to cause toxicity through a receptor mediated mechanism. This receptor also binds aromatic hydrocarbons such as 3-methylcholanthrene and other non-halogenated aromatic hydrocarbons; hence it is termed the Ah receptor.

The Ah receptor is a protein which is normally found in the fluid (cytosol) of the cell (There is some controversy here; some people think it is found solely in the nucleus). Only certain molecules ("ligands") with certain properties (size, shape, etc.) fit it, like a key into a lock. 2,3,7,8-TCDD has the best fit of any known compound. When this occurs, the receptor-ligand complex changes shape and moves into the nucleus. The change in shape helps it to recognize and bind to certain sequences in the DNA. This in turn causes the transcription and translation of adjacent DNA into protein. (This is quite similar to the mechanism of steroid hormones.)

The most well understood effect is the production an enzyme called P450IA1 which makes aromatic hydrocarbons more water soluble--and therefore easier to excrete--by adding hydroxyl (-OH) groups. One measure of this enzyme activity is called aryl hydrocarbon hydroxylase (AHH).

Many of the types of toxicity associated with dioxin-like compounds correlate with binding to the Ah receptor or AHH activity (also with EROD, a related enzyme activity). This provides good evidence that dioxin toxicity is mediated by the Ah receptor, i.e., binding to Ah is the first (but not only) step. It also provides both a theoretical justification and a measurement technique for 2,3,7,8-TCDD equivalents. If all dioxin-like compounds act through the receptor, then the potency of a given compound can be rated against 2,3,7,8-TCDD by their relative ability to bind Ah and induce AHH or EROD activity.

Nevertheless, other experiments show that many toxic effects are probably not directly caused by enzyme induction. Hence, other genes are probably being turned on by the Ah receptor as

Agenda Item L. Petition for Rule Amendment - Dioxin Standard

<u>Date</u>	<u>Date Received</u>	<u>Item Description</u>
May 23, 1991	May 23, 1991	Petition from James River II and Boise Cascade (supported by Associated Oregon Industries, the Northwest Pulp and Paper Association, the City of St. Helens, the Association of Western Pulp and Paper Workers, Local 1, and the United Paper Workers International Union, Local 1097)
June 2, 1991	June 4, 1991	Letter from Roger and Mary Thompson (opposed)
June 4, 1991	June 7, 1991	Letter from Robert J. Thompson (reject petition)
June 6, 1991	June 7, 1991	Letter from Northwest Pulp & Paper (support)
June 6, 1991	June 7, 1991	Letter from Oregon Salmon Commission (opposed)
June 7, 1991	June 10, 1991	Letter and attachments from Greenpeace (deny petition)
June 7, 1991	June 11, 1991	Memorandum from DEQ (recommends rejection of petition)
June 10, 1991	June 10, 1991	Letter from Northwest Environmental Advocates (deny petition)
June 10, 1991	June 10, 1991	Memorandum from Sierra Club Legal Defense Fund (deny petition)
Undated	June 11, 1991	Letter from Environmental Protection Agency (deny petition)
June 11, 1991	June 12, 1991	Letter from Representative Norris (support)
June 11, 1991	June 12, 1991	Letter from Oregon Health Division (deny petition)
June 11, 1991	June 13, 1991	Letter from Representative Van Leeuwen (support)

GREENE

RECEIVED

JUN 19 1991

7 June, 1991

OFFICE OF THE DIRECTOR

Oregon Environmental Quality Commission
c/o Oregon DEQ Director's Office
811 S.W. 6th Avenue
Portland, OR 97204

Director
Oregon Department of Environmental Quality
811 S.W. 6th Avenue
Portland, OR 97204

Dear Commissioners and Director:

We understand that James River, Inc. and Boise Cascade Corp., along with several co-petitioners have asked the Commission and the DEQ to amend the state's ambient water quality standard for 2,3,7,8-TCDD from a current level 0.013 ppq to 2.3ppq.

We wish to offer comments regarding the wisdom of honoring such a petition that we hope you will make part of the public record in this decision.

INADEQUATE PUBLIC NOTICE

First we must question the lack of public notification involved in this pending decision. We have, on more than one occasion, asked to be placed on the DEQ notification list for any water quality actions the Department has pending, particularly with respect to pulp mills.

Our requests have to date been ignored, and we find that the only way to obtain a copy of a notice or a draft permit is to hear of its existence from a third party and then to call the DEQ to request a copy be sent us. Nor have we received word of final decisions regarding permits or any response to permit comments we have offered. To say that this archaic and haphazard method of public notice is deficient is an understatement. It is certainly not consistent with the mandate for public participation inherent in EPA's having delegated the water quality program to the state of Oregon.

That the petitioners themselves have the temerity to suggest they have identified all interested parties as the few listed in item 2 of the Commission Chair's notice, is absurd. A gutting of the state's water quality standard for the most potent chemical known to mankind is not something to be decided privately after consultation with just a few individuals.



Even the more narrow decision the Commission intends to make about whether or not to initiate a rulemaking that could potentially weaken the standard should have received broader notice, e.g. tribal governments, fishing interests, the state health department and those state and federal agencies charged with protecting wildlife (e.g. the U.S. Fish and Wildlife Service).

THRESHOLD MODEL CITED BY PETITIONERS AS FAVORING THE WEAKENING OF A STANDARD HAS NOT BEEN PEER REVIEWED

We remind the Commission that the much touted theory regarding a supposed threshold mechanism for 2,3,7,8-TCDD has not yet been peer reviewed. The forum in which it was first advanced, at a Banbury conference last fall, has itself become known for the controversy it created among attendees (see attachment 1). No version of the theory has yet been published in the scientific literature, and the theory has been challenged by other dioxin scientists (see attachments 2, 3).

EPA's own review of its dioxin standard is still underway and far from finalization, and any attempt by the state of Oregon to presuppose EPA's conclusions would be ill-advised. EPA Administrator William Reilly himself warned against second guessing the Agency's dioxin review, advising that in the interim state governments should go on with business as usual.

There is also new evidence coming from other quarters that tends to refute the threshold theory cited so enthusiastically by the petitioners. Abstracts for two papers to be presented at this fall's dioxin symposium are attached which argue against reliance on such a theory (see attachment 4).

Moreover, a paper by Sargent, et al published in a recent issue of Carcinogenesis (see attachment 5) suggests alarmingly that even non-planar PCB's can act by a mechanism identical to that of coplanar compounds such as 2,3,7,8-TCDD, and that exposure to mixtures resulted in superadditive effects. The authors further state that humans already are exposed to levels at which adverse effects would certainly be occurring. This in turn suggests why the epidemiology concerning exposure to 2,3,7,8-TCDD is at best equivocal, except in very exaggerated doses, as was indeed the case for a recently published NIOSH study (see attachment 6).

EVIDENCE CITED BY PETITIONERS REGARDING BIOCONCENTRATION IN FISH AND FISH CONSUMPTION RATES DIFFERS DRAMATICALLY FROM THAT OFFERED BY MORE CREDIBLE SOURCES

Petitioners suggest that the prevailing way of estimating bioconcentration (BCF) factors in fish used to calculate the current standard should be scrapped, and that a different (less conservative) method for estimating BCF's should be substituted. The method they suggest yields a number in the same ballpark as

the existing one. Yet there is much evidence from EPA's lab in Duluth to suggest that fish are far better at taking up and storing dioxin than the 5000 factor now in use supposes (see attachments 7, 8), and the Agency has requested funds in its 1992 budget to re-evaluate its BCF assumptions.

In fact it has been shown that even Columbia River salmon, species thought to be more protected from uptake because of their mobility and feeding patterns, are harboring levels of dioxin in their edible tissues (see attachment 9).

Patterns of human fish consumption in the Pacific Northwest also argue for a much stronger standard. EPA has long acknowledged that the average fish consumption rate of 6.5 grams per day per person assumed in the setting of its current standard seriously underestimates actual eating patterns, and this has been confirmed by surveys in several states. Moreover, work by EPA's Cleverly and McCormack indicates that Columbia River sports and subsistence fishers, Native Americans, and Asian Americans eat far more fish than the levels suggested by petitioners (see attachment 10). One wonders how petitioners could have arrived at the impossibly low figures they suggest.

Petitioners also make the illogical claim that only fish consumption from the Columbia River need be considered, irrespective of the rest of one's fish diet, as if to suppose that all other sources of fish (or food) are free from contamination.

THE STATE HAS A DUTY TO PROTECT US FROM OTHER HARM THAN JUST CANCER, AND FROM OTHER POLLUTANTS THAN JUST 2,3,7,8-TCDD

Petitioners make mention of Keenan, et al's re-evaluation of the Kociba rat study from which EPA's current acceptable daily intake is derived. They suggest that we should take heart from the fact that slightly more than half a team of 9 scientists funded by the industry should find that many of the liver lesions identified by Kociba as cancerous might only be pre-cancerous after all. A critique of this study is enclosed.

In any case, it is hardly reassuring to expect that one's liver be riddled with dioxin-induced lumps and bumps of any kind. We similarly find no comfort in the fact that women throughout the industrialized world are passing dioxins and other organo-chlorines on to future generations through the placenta and via breast-feeding.

Studies on primates have shown that dioxins can cause profound behavioral and reproductive effects at very low doses. The petitioners ignore all non-cancerous effects in arguing for a weaker standard.

It must also be noted that 2,3,7,8-TCDD never occurs in

isolation. Discharges from the pulp and paper industry include other dioxins and furans and numerous other compounds which exhibit similar mechanisms of toxicity. The Sargent study mentioned above gives added weight to the likelihood that these compounds can act synergistically.

THE STATE HAS A DUTY TO PROTECT THE ENVIRONMENT AS WELL AS HUMAN HEALTH

Petitioners have offered no evidence to suggest that a weakened ambient water quality standard will be sufficiently protective of aquatic life or fish-eating birds and mammals.

Nor have petitioners demonstrated that a weakening of the current dioxin standard will not adversely effect bald eagle populations on the lower Columbia River, as required under the Endangered Species Act. Much evidence already exists to suggest that dioxins and other organochlorines are negatively impacting these birds. The pending listing of various wild salmon species will further increase the burden of proof necessary to justify any continued discharge of dioxin and other organochlorines.

A RELAXING OF THE DIOXIN STANDARD AS PROPOSED BY INDUSTRY WILL NOT RELIEVE THE INDUSTRY OF ANY FINANCIAL BURDEN FOR POLLUTION CONTROL

The same technologies that must be implemented by petitioners to meet the state's current dioxin standard will in any case be required in order to meet the technology-based standards already in their NPDES permits. Indeed, the longer the industry waits to install new bleaching technology, the greater will be their ultimate financial burden.

Capital costs for equipment will only be more expensive, and the money invested in stopgap measures such as chlorine-dioxide generators will only be money wasted. The U.S. industry can also be expected to lose market share in Europe as a result of its recalcitrance, as is already proving the case in Canada. Fletcher Challenge's failure to produce chlorine-free pulp for its foreign market has already cost them an estimated \$ 5 million dollars in loss of sales.

THE ONLY ACCEPTABLE STANDARD FOR DIOXIN IS ZERO, AND THE STATE OF OREGON SHOULD TAKE IMMEDIATE STEPS TO ELIMINATE ALL KNOWN SOURCES

Dioxin is the most intensively studied compound in history, and will doubtless remain the darling of the scientific community for years to come. Even so we still do not know its precise toxicity to humans, and given the degree to which we are all already contaminated with dioxin and dioxin-like compounds, we probably never will. There is simply no such thing as a control group to serve as a baseline.

But what we do know is serious enough to make moot any further quibbling about precisely how much is too much dioxin. What we know is more than enough to justify elimination of all known sources.

We urge the Department and the Commission to deny the petition to set a weaker dioxin standard, and instead use your limited resources to moving the pulp and paper industry into chlorine-free technology. The technologies exist, and only await implementation.

Sincerely,

Shelley Stewart

Shelley Stewart
U.S. Pulp/Paper Project

Please note that these comments are printed on chlorine-free paper imported from Europe. No North American manufacturer has yet been willing to produce chlorine-free bleached office or printing paper.



UNIVERSITY OF MARYLAND AT BALTIMORE

The University Program In Toxicology
660 West Redwood Street
Howard Hall, Room 5-44
Baltimore, Maryland 21201-1596
(301) 328-8196

January 29, 1991

Dr. Jan Witkowski
Director
Banbury Center
Cold Spring Harbor Laboratory
P O Box 534
Cold Spring Harbor, NY 11724

Dear Dr. Witkowski:

I was a participant in the recent Banbury Conference on "Biological Basis for Risk Assessment of Dioxins and Related Compounds" held at the Banbury Center in October 1990. I am writing you because I have just been informed of a very disturbing result of that conference, a press release sent out by a public relations firm along with statements by Drs Scheuplein, van der Heiden, and Gallo purporting to represent the "consensus" views of the participants at that conference with respect to regulatory conclusions related to risk assessment of dioxins. I only learned of this press release from a reporter who called me last week (Marguerite Holloway of Scientific American).

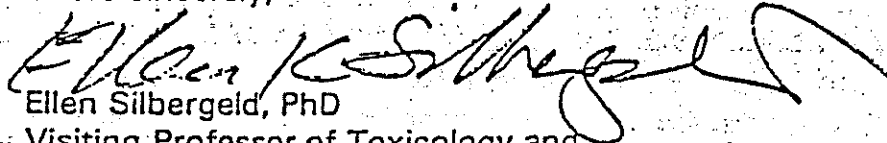
This press release, copy enclosed, was never shown to me or to most of the participants in the conference, as far as I know. Thus, in terms of process alone, it should not be represented as a "consensus" document. Moreover, its contents do not accurately reflect the views of all participants, or even a consensus of those views, as best I can determine. I resent the circulation of this press release as reflecting the views of a meeting in which I was a participant, and I feel that my name attached to it somehow implies my agreement with it.

I am in fact rather astounded by such a product from a Banbury Conference. While it was rather obvious to some of us that the organizers, and some of the sponsors, of this conference had some trans-scientific objectives in mind related to regulations concerning dioxin, I had expected that the Banbury Center would be able to keep these motives under control. The press releases and statements imply that a major focus of the conference was a discussion of the regulatory risk assessments that have been applied to the dioxins; this was not the focus of this meeting. I agreed to participate based upon my previously held high regard for Banbury and Cold Spring Harbor. I did not expect to be manipulated by industry and government spokespeople

(who are not dioxin researchers, incidentally) to be made into a supporter of their political views on dioxins and risk assessment. This is particularly annoying to me because I was invited to present the main conference paper on the topic of the scientific basis for dioxin risk assessment. In this paper, I have attempted to present the complexity of integrating the basic molecular biology of dioxins into a receptor-based model. I do not feel that the state of knowledge on this complex topic can be reduced to a simplistic press release.

The preparation and release of these documents by Drs Scheuplein, van der Heijden, Carlo, and Gallo, with the assistance of a public relations firm, discredits all of us. It challenges the precious institution of free scientific discussion, epitomized by such places as Banbury, Dahlem, and the Gordon conferences. I hope you believe that I would be just as angry if this action had been taken by an environmental group. I trust you will take action to dissociate Banbury from this attempt to manipulate science and scientists. Because these people have acted without consulting the rest of us, and because I have heard about this only through the press, I am with great regret also sending this letter to the persons shown under my signature, as well as to my colleagues at the conference, an action not taken by these people.

Yours sincerely,



Ellen Silbergeld, PhD

Visiting Professor of Toxicology and
Adjunct Professor of Pharmacology
and Experimental Therapeutics

cc: Leslie Roberts, Science
Marguerite Holloway, Scientific American
Cristine Russell, Washington Post
Chris Joyce, New Scientist
Judy Randall, The Economist
Betty Mushak, NIEHS
William Farland, EPA
attendees, Banbury Conference on Dioxins

History Lessons

Warfare analysts offer some disturbing—and hopeful—news

Political leaders always claim to be steering us by the lights of history toward a peaceful future. But what does a comprehensive analysis of our past actually reveal about our present course? A pessimist could conclude that our leaders are completely misreading—or misrepresenting—history. An optimist could find hope that warfare might become obsolete anyway—if the tentative spread of democracy worldwide continues.

These conclusions are both supported by the Correlates of War project, a

computerized storehouse of information on 118 wars (defined as conflicts leading to at least 1,000 deaths) and more than 1,000 lesser disputes from the early 1800s to the present. Researchers at the University of Michigan created the data base in the 1970s to find statistical associations between warfare and various economic, political and social factors.

The data offer no support for the bromide "peace through strength," according to J. David Singer, a political scientist at Ann Arbor who oversees the Correlates project. A buildup of military armaments, far from deterring war, is one of the most frequent precursors of it. At the very least, Singer says, such a finding suggests that the U.S. policy of supplying arms to na-

the Middle East—is seriously flawed.

There is also no evidence that alliances help to keep the peace. In fact, a nation's participation in one or more alliances increases its risk of warfare, Singer says, particularly against its allies. History even casts doubt on the argument—used by the U.S. to justify both its current war against Iraq and its past one against Vietnam—that allowing aggression to proceed unchecked always leads to more aggression. Although Hitler's Europe certainly provides an important counterexample, Correlates of War data yielded little statistical correlation between warfare in a given region and prior unchecked aggression, Singer says.

A somewhat more hopeful finding

A Press Release on Dioxin Sets the Record Wrong

When the Chlorine Institute shopped around for a place to hold a scientific conference, they did not want just any host. "We were looking for an organization that was squeaky clean, that would not in any way, shape or form be questioned about the conference," says Robert G. Smerko, president of the Washington, D.C.-based institute, which is supported by some 170 chemical, paper and other manufacturers.

Smerko seemed to have met his requirements when he finally landed Cold Spring Harbor Laboratory. Last October the laboratory's respected Banbury Center held a conference—jointly sponsored by the Chlorine Institute and the Environmental Protection Agency—on the toxicity of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin, or TCDD. That chlorinated compound achieved notoriety during the Vietnam War, when it was identified as a contaminant of the defoliant Agent Orange. It remains controversial because it is found in some commercial herbicides and is produced in other chemical processes, such as paper bleaching.

Cold Spring Harbor Laboratory may have been squeaky clean, but the conference apparently was not. And the outcome of that meeting—attended by 38 of the world's dioxin experts, few of whom say they knew it was industry sponsored—is every bit as controversial as the substance that was the topic of discussion.

The issue is a press release sent out at the conclusion of the meeting by the Chlorine Institute's public relations firm, Daniel J. Edelman, Inc. It announced that the experts had agreed on a model for the toxicity of dioxin that "allows for the presence of a substance in the environment, with no risk experienced below a certain level of exposure." The release said that the scientists had rejected a linear exposure model, in which any level of exposure would have a biological effect, in favor of a receptor-based model that implies a threshold level. (This part of the release was approved by Cold Spring Harbor Laboratory, says the Banbury Center's director, Jan A. Witkowski—although he now says Edelman made several changes after he saw it.)

Such a consensus, of course, would have implications for setting permissible levels of the substance in the environment. But those at the conference insist that no such

agreement was reached. "There was no consensus in terms of risk assessment," says George W. Lucier of the National Institute of Environmental Health Sciences. In addition, none of the scientists saw the press release, although their names accompanied it. "We were being used, clearly, and that's unfortunate," declares Arnold J. Schecter, professor of preventive medicine at the State University of New York at Binghamton. "Political layering is not particularly good, especially when it is unbeknownst," Lucier adds.

Few of the participants seem to dispute that the receptor-based mechanism of dioxin is relevant to human exposure. Nor did they before the conference, observes Alan P. Poland of the University of Wisconsin at Madison, who discovered the receptor in 1976. "The basic tenets were all known since 1981 or 1982," Poland says. But Lucier notes that now "we are at the point where we can reevaluate the linear model."

Indeed, the EPA intends to explore the question of whether there is a threshold response. The agency will investigate the receptor-based model with Michael A. Gallo, one of the conference organizers and a professor of toxicology at the University of Medicine and Dentistry of New Jersey-Robert Wood Johnson Medical School. But Gallo and others agree that discussion of thresholds in a regulatory context may be premature. At the conference, "some regulators got real excited by back-of-the-envelope calculations" and thought dioxin standards could be eased, says Linda S. Birnbaum, director of the EPA's environmental toxicology division. "Clearly, we don't know that."

Although many of the Banbury attendees were the last to know about the consensus they reportedly reached, news about the conference traveled quickly in political circles. At a recent hearing on dioxin standards in Alabama, expert witness for the pulp and paper industry Russell E. Keenan invoked the Banbury results in his testimony. "There was general agreement among the attending scientists that dioxin is much less toxic to humans than originally believed," Keenan claimed. Obviously, "it is not useless to tout Banbury results if you have a political ax to grind," comments Cate Jenkins, a chemist in the EPA's hazardous waste division. —Marguerite Holloway

PERKINS COIE

A LAW PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS

U.S. BANCORP TOWER, SUITE 2500 ▪ 111 SOUTHWEST FIFTH AVENUE ▪ PORTLAND, OREGON 97204

TELEPHONE: (503) 295-4400

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

RECEIVED

JUN 11 1991

June 11, 1991

OFFICE OF THE DIRECTOR

Via Facsimile:

Mr. Henry C. Lorenzen
Corey-Byler-Rew
222 S.E. Dorion
Pendleton, OR 97801

Mr. Emery Castle
Oregon State University
307 Ballard Hall
Corvallis, OR 97331

Ms. Carol A. Whipple
Rocking C Ranch
Elkton, OR 97436

Hand Delivered:

Mr. Fred Hansen
Director
Oregon Department of
Environmental Quality
811 S.W. Sixth Avenue
Portland, OR 97204

Mr. William P. Hutchison, Jr.
Chairman, Environmental
Quality Commission
Tooze, Marshall, Shenker,
Holloway & Duden
333 S.W. Taylor Street
Portland, OR 97204

Mr. William W. Wessinger
1133 West Burnside Street
Portland, OR 97209

Dear Chairman Hutchison, Members
of the Commission and Director Hansen:

The following comments are submitted on behalf of Northwest Environmental Advocates regarding the revised draft NPDES permit and the proposed Stipulation and Final Order (SFO) for the City of Portland's sewage treatment system.

At the outset, we commend the process being followed by the Department and the Commission in this matter. The draft permit has been substantially revised in response to public comments; however, these revisions have raised some significant issues that need attention, as discussed below.

Likewise, the current version of the SFO is a considerable improvement over the first draft. However, in a number of key aspects, it still falls well short of an expeditious compliance plan that includes all feasible and cost effective short-term CSO abatement measures. Much of the improvement you see in the SFO is the product of the six negotiating sessions we have held with the City over the past several weeks. Although we have made steady progress in these negotiations, a number of issues of direct importance to improving the water quality of the Slough and the Willamette River, and to protecting public health during the long process of reaching full compliance, remain to be resolved.

To move the negotiation process along towards a complete agreement that is in the best interests of the environment as well as the various parties, we have delivered to the City a comprehensive settlement proposal. A copy of that proposal is enclosed for the Commission's consideration. Although we are aware that EPA has imposed a June 30 target date for the issuance of the NPDES permit, we do not believe that date should drive the negotiation process. We are committed to spending whatever time it takes to reach an acceptable agreement; however, the number of issues that remain for discussion make it doubtful that we can reach that result in three weeks. After describing the remaining legal and policy problems with the permit and the SFO, we will suggest alternative ways of handling this timing problem.

Permit Issues

We recommend deletion of the statement in Schedule A, Condition 1.e(2) to the effect that the requirement to maximize in-line collection can be met by simply maintaining the dams at current heights. Obviously, in-stream storage is not being "maximized" by a requirement to do nothing. There has been no determination that the existing system is anywhere near its maximum storage capacity. Indeed, that is one of the key pieces of information being developed by the City's consultants as part of the facilities planning process. Optimization of system storage is one of many techniques that EPA classifies as "BPJ" under its national CSO strategy. However, until we have hard data, there is no way to assess the capability of the Portland system to store more flows.

We continue to question the provision (Schedule A, Condition 1.e(4)) that allows dry weather discharges to continue until March 31, 1996. The EPA CSO strategy states that prohibition of dry weather discharges is a "minimum" technology-based limitation applicable to "all" CSO discharges. (See attached copy of strategy.) In short, the strategy requires that these discharges be precluded upon permit issuance. We have asked both the City and the Department for an explanation of why it will take almost four years to eliminate such discharges but have yet to receive a response. At a minimum, this provision should be removed from the permit; if necessary, should be dealt with as a compliance matter in the SFO and settlement agreement.

SFO Issues

We request deletion of the statement in paragraph 3 that the CSO's were covered under the previous (1984) NPDES permit for the treatment plant. This is gratuitous language designed to assist the City in its defense of the lawsuit. In short, let the prior permit speak for itself. The Department's effort to "editorialize" on the effect of the prior permit is inappropriate. That is for the court to decide, should it come to that.

We also recommend deletion of the statement in paragraph 7 that no past penalty is appropriate for the City's massive violations of the Clean Water Act over the years. Here again, the Department is trying to help the City defend the lawsuit. If the Department does not wish to assess a penalty, that is its prerogative, as unfortunate as that may be in terms of sending the wrong enforcement signal. However, the public and the courts should not be misled by the appearance that the Department and the Commission have gone through some kind of careful process to arrive at the conclusion that a penalty is not "appropriate" in this case. Indeed, we seriously question whether the Department could justify such a conclusion based on the factors it must consider under its civil penalty policy. See OAR 340-12-045.

Future Course of Action

Thus far, the Commission has played a constructive role in improving the SFO and the permit, and in prodding the parties towards agreement. Good progress has been made, but some hard work lies ahead. We urge the Commission to focus on the environmental gains to be achieved through continuing this process and to decline to approve the latest version of the SFO, which represents only a partial resolution of the

Chairman Hutchison
and Members of the Commission
June 11, 1991
Page 4

outstanding issues that are described in our settlement proposal.

We suggest there are two options open to the Commission at this point. The first is to separate the SFO from the permit and to establish a new deadline, perhaps the August meeting of the Commission, to consider adoption of the final SFO. This would provide the parties sufficient time to reach an agreement and perhaps have it in final written form. We suggested this approach to the City and offered to hold it "harmless" for any penalties that might accrue during the time it takes to negotiate an agreement. The City declined our offer and advised that it intends to seek approval of the SFO notwithstanding the unresolved issues in our negotiations. Since there is no legal requirement that the order accompany the permit, and since the City would not be exposed to any additional liability as a result of the permit being issued (we have confirmed this reading of the law with the Department of Justice), it is clear that the City simply seeks to gain an advantage in the litigation by having the responsible state agencies "sign-off" on a SFO that requires considerably less than it could in terms of immediate abatement, restoration and ultimate compliance. We urge the Commission to reject this ploy.

Should the Commission decide that it must approve a SFO in time for the permit to issue, an alternative course of action would be to include a provision making it clear that the SFO is tentative pending the outcome of the ongoing negotiations, and that it is not intended to affect the outcome of the pending litigation. We suggest the following wording to accomplish this purpose:

This Order is not meant to affect the outcome of the litigation styled Northwest Environmental Advocates vs. City of Portland, No. CV-91-339-PA, which is pending before the United States District Court for the District of Oregon. Further, this Order may be reopened by the Commission at any time to incorporate additional CSO abatement measures that are agreed to by the parties to this litigation or that may be ordered by the court.

Chairman Hutchison
and Members of the Commission
June 11, 1991
Page 5

We plan to attend the June 14 meeting of the Commission
and would appreciate the opportunity to discuss these issues
with the members of the Commission.

Sincerely,

A handwritten signature in cursive script that reads "Patrick Parenteau". The signature is written in dark ink and is centered below the word "Sincerely,".

Patrick A. Parenteau

PAP/cab
CB6.DOC
Enc.

cc: Ms. Lydia Taylor
Mr. Larry Edelman
Ms. Jan Betz

**NATIONAL
COMBINED SEWER OVERFLOW
CONTROL STRATEGY**

AUGUST 10, 1989

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF WATER ENFORCEMENT AND PERMITS

(54 FEDERAL REGISTER 37370)

National Combined Sewer Overflow Control Strategy

Introduction

Combined sewer overflows (CSOs) are flows from a combined sewer in excess of the interceptor or regulator capacity that are discharged into a receiving water without going to a publicly owned treatment works (POTW). CSOs occur prior to reaching the headworks of a treatment facility and are distinguished from bypasses which are "intentional diversions of waste streams from any portion of a treatment facility" (40 CFR 122.41(m)).¹

Most major municipal areas in the United States are served by a combination of sanitary sewers, separate storm sewers, and combined sanitary and storm sewers. The Agency has estimated that there are between 15,000 and 20,000 CSO discharge points currently in operation. Sanitary sewer systems must adhere to the strict design and operational standards established to protect the integrity of the sanitary sewer system and wastewater treatment facilities. Discharges from separate sanitary sewer systems with less than secondary treatment are prohibited. The regulation of discharges from separate storm sewer systems is addressed in section 402(p) of the Clean Water Act (CWA). EPA is proposing regulations implementing section 402(p) which include requirements to develop system-wide municipal storm water management programs to reduce pollutants from municipal separate storm sewers. The following strategy is designed to control effluents from combined systems which are not regulated under the sanitary system standards nor as discharges from separate storm sewer regulations.

This CSO permitting strategy is designed to complement the control programs for sanitary sewers and separate storm sewers. This strategy establishes a uniform, nationally-consistent approach to developing and issuing NPDES permits for CSOs. CSOs have been shown to have severe adverse impacts on water quality, aquatic biota, and human health under certain conditions. Therefore, permits for CSOs are to be developed expeditiously to minimize these potential impacts by establishing

technology-based and water quality-based requirements.

The objectives of this strategy are threefold:

- (1) To ensure that if CSO discharges occur, they are only as a result of wet weather.
- (2) To bring all wet weather CSO discharge points into compliance with the technology-based requirements of the CWA and applicable State water quality standards, and
- (3) To minimize water quality, aquatic biota, and human health impacts from wet weather overflows.

Statement of Strategy

CSOs are point sources subject to NPDES permit requirements including both technology-based and water quality-based requirements of the CWA. CSOs are not subject to secondary treatment regulations applicable to publicly owned treatment works (*Montgomery Environmental Coalition vs. Costle*, 646 F. 2d 568 (D.C. Cir. 1980)).

Technology-based permit limits should be established for best practicable control technology currently available (BPT), best conventional pollutant control technology (BCT), and best available technology economically achievable (BAT) based on best professional judgement (BPJ) when permitting CSOs. The CWA of 1977 mandates compliance with BPT on or before July 1, 1977. The Water Quality Act Amendments of 1987 (WQA) mandates compliance with BCT/BAT on or before March 31, 1989.

Section 301(b)(1)(C) of the CWA mandates compliance with water quality standards by July 1, 1977. In addition it is likely that at least some CSO discharges will be point source discharges to waters listed under section 304(1) of the CWA and subject to the control requirements of that Section.

All CSO discharges must be brought into compliance with technology-based requirements and State water quality-based requirements. The Agency expects that this can be achieved using a combination of CSO control measures.

Applicability of Strategy

This strategy applies to all CSOs. Flows in combined sewers can be classified into two categories: wet weather flow and dry weather flow. Wet weather flow is a combination of sanitary flow, industrial flow, infiltration from groundwater, and stormwater flow, including snow melt. Dry weather flow is the flow in a combined sewer that results from domestic sewage, groundwater infiltration and industrial wastes with

no contribution from stormwater runoff or stormwater induced infiltration.

This strategy applies to EPA and approved NPDES States. EPA Headquarters will oversee the implementation of the strategy to ensure actions taken by the Regions and States are consistent with the national strategy and that the Agency as a whole is making progress towards meeting the statutory requirements and achieving the water quality objectives of the CWA.

This strategy does not apply to bypasses. Bypasses are "intentional diversions of waste streams from any portion of a treatment facility." The treatment facility begins at the headworks where equalization of the waste streams takes place. Bypasses are regulated under 40 CFR 122.41(m). Bypasses from any portion of the treatment facility are prohibited unless the criteria in 40 CFR 122.41(m)(4) are satisfied. These criteria are (1) bypasses are unavoidable to prevent loss of life, personal injury, or severe property damage; (2) there are no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime; and (3) the permittee submitted notices as required under 40 CFR 122.41(m)(3).

Implementation

Communities are responsible for developing and implementing system-wide combined sewer management plans. State-wide permitting strategies will be developed by the States or Regions to ensure implementation and consistency with this CSO strategy. Permitting strategies should be developed no later than January 15, 1990 and Regions should approve State strategies no later than March 31, 1990. A discussion of different elements that may be addressed in the strategies is provided below.

1. Identification

CSO point sources currently discharging without a permit are unlawful and must be permitted or eliminated. The Regions and States must identify the communities with combined sewer systems and each particular CSO discharge point within these communities. The permitting strategy should place each CSO discharge point into one of three categories: (1) Not permitted; (2) permitted in conjunction with POTW; and (3) permitted separately from POTW. The status of compliance with technology-based and water quality-based permit-

¹ Flows to the treatment works (POTW), including dry weather and wet weather flows, are subject to secondary treatment regulations, water quality standards, and the National Municipal Policy. Dry weather discharges from CSOs, which are also subject to this strategy, are illegal and must be expeditiously eliminated. Regions and approved States should use appropriate enforcement actions to eliminate such activities and assure compliance.

requirements should be provided for each CSO discharge. An ongoing commitment of evaluating and maintaining CSO location and permit discharge status records should be adopted by every community.

2. Priorities

The Regions and States are expected to set priorities in permitting and controlling the unpermitted and insufficiently permitted discharges. In addition to the requirements identified above, the permitting strategy should describe the Regional or State completed and planned actions and timing to bring the discharges into compliance. Permitting and control priorities should be established based upon a system-wide evaluation of known or suspected impacts from CSOs using estimates of flows, frequencies, durations, and pollutant loadings to rank POTW collection systems for permitting.

One of the most important considerations for establishing priorities is whether the CSO discharges to marine or estuarine waters. Other factors to be considered in the priority setting effort are the nature of CSO control measures and the use designation of streams and the estimated increases in beneficial uses resulting from these measures, receiving waters listed under section 304(1) of the Water Quality Act of 1987, other water program efforts such as the Great Lakes program and pretreatment program evaluations.

3. Permit Issuance

A single, system-wide permit should be issued whenever possible for all discharges, including overflows, from a combined sewer system operated by a single authority. The permit should identify separately, as specifically as possible, the location of each overflow in the system (i.e., longitude, latitude, street address, and a map).

Different parts of a single combined sewer system are in some cases owned and/or operated by more than one authority. Permits issued to such authorities should require joint preparation and implementation of the requirements of this strategy and specifically define the responsibilities and duties of each owner and operator. The POTW is responsible for planning and coordinating a system-wide approach. The individual owners and/or operators are responsible for their own discharges and must cooperate with the POTW. When a CSO is permitted separately from the POTW, the POTW's NPDES permit should cross-reference this for informational purposes.

4. Compliance Schedules

Compliance dates for water-quality and technology-based limitations are governed by the statutory deadlines in section 301 of the CWA. CSOs that discharge toxic pollutants into water bodies listed under paragraph (B) of section 304(1) of the CWA are additionally regulated under section 304(f). All CSOs that are subject to section 304(1) must achieve applicable water quality standards by the statutory deadlines in that Section (see Final Guidance for Implementation of Requirements Under section 304(1) of the CSW as Amended, March 1988 and forthcoming regulations). To the extent technology and water quality-based limitations cannot be met by the applicable dates, the permit should contain the statutory dates and public notice should be given simultaneously with an administrative enforcement order or other appropriate enforcement actions requiring compliance within the shortest reasonable time. Effluent limitations based upon newly developed water quality standards or new interpretations of existing water quality standards, however, may be covered by compliance schedules in the NPDES permit. This strategy is not to be considered a new development or new interpretation of water quality standards.

5. Minimum Technology-Based Limitations

All permits for CSO discharges should require the following technology-based limitations as a minimum BCT/BAT, established on a BPI basis: (1) Proper operation and regular maintenance programs for the sewer system and combined sewer overflow points; (2) maximum use of the collection system for storage; (3) review and modification of pretreatment programs to assure CSO impacts are minimized; (4) maximization of flow to the POTW for treatment; (5) prohibition of dry weather overflows; and (6) control of solid and floatable materials in CSO discharges. Control measures, as mentioned below, may also be required on a case-by-case basis to address the particular circumstances of each combined sewer system and overflow point. All BPI permits must consider the factors set forth at 40 CFR 125.3(d).

6. Additional CSO Control Measures

Cost is always a consideration when establishing technology-based limits in NPDES permits (40 CFR 125.3). However, the CWA under section 301(b)(1)(C) also requires any additional permit limits that may be necessary to

protect State water quality standards. In the event additional control measures are necessary, the permittee should choose the most cost effective control measures which will insure compliance with water quality standards. For example, CSO control programs should be designed to incorporate best management practices and other low cost operational methods and only incorporate more expensive control measures if necessary to meet water quality standards.

Additional control measures that should be considered to bring all wet weather CSOs into compliance with technology-based and applicable State water quality standards include: improved operation and maintenance, best management practices, system-wide storm water management programs, supplemental pretreatment program modifications, sewer ordinances, local limits program modifications, identification and elimination of illegal discharges, monitoring requirements, pollutant specific limitations, compliance schedules, flow minimization and hydraulic improvements, direct treatment of overflows, sewer rehabilitation, in-line and off-line storage, reduction of tidewater intrusion, construction of CSO controls within the sewer system or at the CSO discharge point, sewer separation, and new or modified wastewater treatment facilities.

7. Monitoring

Monitoring requirements for wet weather CSOs will vary based on the unique circumstances of each combined sewer system and overflow point. Cost effective monitoring requirements should be developed to serve three purposes: (1) To characterize CSO discharges, including their frequency, duration, and pollutant loadings; (2) to evaluate the water quality impacts of these discharges; and (3) to determine compliance with CSO permit requirements.

Discharge monitoring and/or modeling, wasteload allocations that address rainfall-related hydrological conditions, and often stream surveys are necessary to measure the extent to which CSO discharges are causing violations of technology-based limitations or water quality standards, and to design corrective programs. These monitoring/modeling requirements should be included in the initial CSO permit with reopener clauses to adjust permit limits as warranted.

Compliance monitoring requirements should also be included in CSO permits. These monitoring requirements should include collecting and reporting data on CSO events and insuring that no dry weather overflows occur. Monitoring may also include inspections or reports aimed at assuring that required facility improvements have been made and/or that best management practices and other operation and maintenance requirements are being effectively implemented. Permits should require development and implementation of a monitoring plan or program to assure data needs are met. In-stream monitoring is expected to be conducted after improvements are made to assure water quality standards are met.

8. Water Quality Standards Modification

Section 301(b)(1)(C) of the CWA mandates compliance with water quality standards. Permits must be written to ensure CSO discharges do not cause violations of water quality standards. The applicability of water quality standards should not be waived under any circumstances. In limited cases, it may be appropriate to adjust some water quality standards to address the impact of pollutants in wet weather flows more adequately. In these cases, this strategy encourages monitoring, modeling, or wasteload allocation procedures to better quantify influences and formulate control strategies to address rainfall-related hydrological conditions.

EPA sets forth the criteria for modifying State water quality standards at 40 CFR 131.10(g). In general, States may remove a designated use which is not an existing use as defined in 40 CFR 131.3, or establish subcategories of a use if the State can demonstrate that attaining the designated use is not feasible because of one of the six enumerated criteria listed at 40 CFR 131.10(g) including that controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact. States may not remove designated uses if they are existing uses, as defined in 40 CFR 131.3, unless a use requiring more stringent criteria is added; or if such uses will be attained by implementing effluent limits required under sections 301(b) and 306 of the Act and by implementing cost effective and reasonable best management practices for nonpoint source control. Additionally, prior to removing any uses or establishing subcategories of use, the State must provide notice and an opportunity for public hearing under 40 CFR 131.20(b).

Changes in designated uses or the establishment of subcategories of uses must be made on a site-specific basis in accordance with the procedures specified in 40 CFR 131.10(f).

In instances where current State water quality standards waive or relax compliance with those standards during wet weather, these wet weather provisions should be revised during the next triennial review to ensure appropriate water quality standards coverage during wet weather events.

9. Funding

CSOs which cause adverse impacts on water quality and human health should be considered for funding. CSO corrections are fundable under both the Construction Grants and State Revolving Fund programs, although significant limitations apply.

Construction grants may be awarded for CSOs under the following CWA provisions: section 201(g)(1) Governor's 20 percent discretionary fund; section 201(n)(1) funding from State's regular allotment for CSOs that are a major State priority and meet the water quality criteria in regulation (40 CFR 35.2024); and section 201(n)(2) special national fund, from a reserve of 1 percent of construction grants appropriated in FY 89 and FY 90, for marine CSOs that meet the water quality criteria in the regulation.

Before a State Revolving Fund (SRF) may use the capitalization grant, State match, or repayments of first round loans from the grants for CSOs, the State must meet the first use requirements, i.e., its National Municipal Policy list of projects must all be in compliance, on an enforceable schedule, have an enforcement action filed, or have a funding commitment. Once the first use requirement is met, the SRF may make loans or provide other assistance for CSOs with 20 percent of its grant amount (or with other grant dollars for CSOs under section 201(n)(1)) and with all of its matching or other funds in excess of the grant amount. Before the first use requirement is met, the SRF may fund CSOs with State funds in excess of the matching, bond proceeds in excess of the grant and match, and repayments of loans made with non-grant funds. For further information regarding SRF funding, see *Initial Guidance for SRFs*, January 1988.

10. Permit Application Forms

CSOs that are permitted in conjunction with a POTW should be identified in the permit application form submitted to the permitting authority. POTWs must submit a Form A (EPA Form 7550-22) 180 days prior to

discharge or permit expiration. CSOs that are permitted separately from a POTW, should submit a NPDES Form 2 (EPA Form 3510-2C) to the permitting authority 180 days prior to permit expiration. For new CSOs, NPDES Form 2D (EPA Form 3510-2D) should be submitted 180 days prior to discharge.

Dated: August 10, 1989.

Rebecca W. Hanmer,
Acting Assistant Administrator for Water.

[FR Doc. 89-21168 Filed 9-7-89; 8:45 am]

BILLING CODE 1550-50-M

[OPTS-59274C; FRL-3642-9]

Certain Chemicals Approval of a Test Marketing Exemption

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: This notice announces EPA approval of an application for test marketing exemption (TME) under section 5(h)(1) of the Toxic Substances Control Act (TSCA) and 40 CFR 720.39. EPA has designated this application as TME-89-23. The test marketing conditions are described below.

EFFECTIVE DATE: September 1, 1989.

FOR FURTHER INFORMATION CONTACT: Andrea Pfahles-Hutchens, New Chemicals Branch, Chemical Control Division (TS-794), Office of Toxic Substances, Environmental Protection Agency, Rm. E-611, 401 M St. SW., Washington, DC 20460, (202) 382-2255

SUPPLEMENTARY INFORMATION: Section 5(h)(1) of TSCA authorizes EPA to exempt persons from premanufacture notification (PMN) requirements and permit them to manufacture or import new chemical substances for test marketing purposes if the Agency finds that the manufacture, processing, distribution in commerce, use, and disposal of the substances for test marketing purposes will not present an unreasonable risk of injury to health or the environment. EPA may impose restrictions on test marketing activities and may modify or revoke a test marketing exemption upon receipt of new information which casts significant doubt on its finding that the test marketing activity will not present an unreasonable risk of injury.

EPA hereby approves TME-89-23. EPA has determined that test marketing of the new chemical substance described below, under the conditions set out in the TME application, and fr

Settlement Proposal

- I. **Form of the Document** - The settlement must be embodied in a consent decree. Only through this approach can we ensure adequate third-party enforcement.

- II. **Compliance Schedule**
 - A. **Interim Measures**
 1. **Flushing and Cleaning the System** - The City must commit to spend \$2.2 million per year on flushing and cleaning activities designed to reduce overall CSO discharge loads and, in particular, the "first flush" effect.

 2. **Street Sweeping** - The City must commit to continue spending the \$1.5 million per year that it is projected to spend in 1992. Additionally, the City should perform a study by 6/1/93 indicating whether further expansion of this program would cost-effectively further reduce pollutants (particularly toxics) in the CSO discharges.

 3. **Maintenance** - The City must commit to modify and rechannelize the remaining 35 diversion structures identified as being subject to plugging in the July 1989 report that have yet to be addressed, unless there is a specific finding that a given structure will not be subject to further plugging. Additionally, the City must submit within six months an inspection and maintenance plan designed to ensure that any further plugging problems are identified and addressed on a timely basis and that catch-basins are properly maintained.

 4. **The City must agree to eliminate of all dry-weather overflows by 6/1/92.**

 5. **Monitoring** - The City must immediately implement a monitoring program capable of determining whether CSO discharges are occurring from the diversion structures and, if so, the volume of the discharge. Additionally, the City must submit within six months a proposed monitoring program designed to determine the composition of the CSO discharges. At a minimum, this program should be capable of characterizing the discharge flow for suspended solids, BOD, fecal coliform, enterococci, and nutrients in six storm events (five, large and small, distributed throughout the

wet weather season, and one during the "first flush") at representative diversion structures.

6. Batch Discharges - The City must ensure that all feasible steps are taken within one year to prohibit industrial discharges during rain events. The City should propose a plan within three months indicating how it will accomplish this goal. This plan can include the issuance of variances based upon feasibility concerns on a case-by-case basis.
7. Public Notification
 - a. The City must install signs at CSO outfalls, public boat launches and moorages, and throughout the Slough warning of bacteria hazards during periods of wet weather. The signs on the Slough should also warn of the danger of eating fish and/or crayfish.
 - b. The City must install buoys around the CSO "mixing zones" to prevent access.
 - c. The City must implement an educational campaign geared to anglers, boaters, and recreational users (e.g., information made available at stores selling waterskiing equipment).
 - d. The City must agree to issue news releases for all CSO discharges during the dry-weather months (May 15 - October 15).

B. Rolling Best Professional Judgment (Interim Measures that Require Further Study Before Implementation)

1. Within the next year, the City must evaluate the sources and depositional areas for syringes and then establish syringe controls based upon that analysis.
2. By 6/1/92, the City must submit a report to DEQ indicating the feasibility of heightening the various dams associated with the diversion structures. This report must include a proposal to DEQ regarding the dams that should be heightened and the extent thereto, as well as justifications for the decisions regarding those dams which are determined not to merit heightening.

3. The City must address, no later than the submittal of the facilities plan, whether certain CSO outfalls merit immediate action due to their impact on sensitive receptors. The facilities plan should specifically consider whether all CSOs that discharge to the Slough should be rerouted into either the Willamette or the Columbia on a fast-track basis.
4. The City must address, no later than the submittal of the facilities plan, whether further steps should be taken to maximize the in-system storage capabilities of the combined sewer system. This analysis should include consideration of the possible utilization of inflatable dams, hydraulically controlled gates, and other similar technologies.

C. Long-Term Compliance

1. Schedule for Submittal of Facilities Plan
 - a. August 1991 - Draft Scope of Study
 - b. October 1991 - DEQ Approval of Scope of Study
 - c. July 1993 - 1st Draft of Facilities Plan
 - d. December 1993 - Revised Draft
 - e. June 1994 - Submittal of Final Facilities Plan
 - f. July 1994 - EQC Approval of Facilities Plan
2. Components of Long-Term Compliance
 - a. Full implementation of BAT/BCT.
 - b. Compliance with water quality standards.
3. Outside Compliance Dates
 - a. Full compliance must be achieved within 10 years after approval of the facilities plan. Either party should be able to petition the court to alter this date during the facility plan approval process, based upon good cause shown, if DEQ and/or the EQC concurs with the proposed change.

If the City is uncomfortable with a presumption in favor of a ten-year implementation period, NWEA would be willing to leave the establishment of the ultimate compliance date as an issue to be resolved in the facility plan approval process

- b. In no event shall the final compliance deadline extend beyond 2011. The consent decree should specifically contemplate that the plaintiffs can petition the court for a sewer-hookup moratorium if the final deadline is not met.

III. **Restoration Projects** - In lieu of paying a penalty, the City may create a fund of \$2.5 million for restoration projects to be selected either prior to the finalization of the decree or by the CSO Advisory Board (described below). Potential projects include sediment remediation, remediation of the solid waste that has been deposited on the banks over the years beneath the CSO outfalls, a fate and transport study of the toxic pollutants discharged from the CSOs, an analysis of the tidal influence on the Willamette, long-term biomonitoring of the Slough, and/or other projects such as those we have put forward in other documents.

IV. **Public Participation**

- A. **Public Record** - The City must agree to maintain a public record at the Multnomah County Library throughout the period of any compliance activities. At a minimum, this record should include periodic reports (compiled every six months) on the CSO discharges and the status of the abatement work. These reports, which are to be much more substantive than typical fact sheets, should also be submitted to the Environmental Quality Commission, the media, and all Portland area legislators (state and federal).
- B. **Independent Review of Facilities Plan** - \$100,000 must be made available to a three-person CSO Advisory Board to hire a reputable consultant to provide independent analysis of the first and second drafts of the facilities plan. This analysis would be for the benefit of the DEQ, the EQC, Portland area legislators, the general public, and (potentially) the court.

The City, NWEA, and DEQ will each appoint one member of the Advisory Board.

V. **Third-Party Enforcement**

- A. **Stipulated Penalties** - NWEA is satisfied with the amounts of the stipulated penalties set forth in the proposed SFO. Three changes must be made to the overall scheme:
1. It needs to be retailored to pick up the additional compliance elements established herein;
 2. The stipulated penalties must be self-implementing; that is, the City must be obligated to pay any stipulated penalties immediately upon non-compliance with any requirement of the decree, without any requirement of notice from DEQ and/or NWEA; and
 3. We would prefer if the stipulated penalties were paid into a fund to be spent on further restoration projects, as selected by the CSO Advisory Board.
- B. **Dispute Resolution** - The decree must provide a mechanism by which DEQ, the City, and NWEA can iron out any disputes regarding the adequacy of any deliverables or any other disputes pertaining to the implementation of the decree (e.g., whether a violation of the decree has occurred). This dispute resolution process would be non-binding, with any remaining issues at the end of the process being reserved for the court, as set forth below.
- C. **Judicial Oversight** - Both the City and NWEA should have the right to submit issues remaining after completion of the dispute resolution process to the court for final determination. This is not intended to undercut DEQ's general authority to determine what the law requires. The court presumably would give appropriate deference to any DEQ positions (i.e., an arbitrary and capricious standard of review). The court should have the opportunity, however, to use its powers of persuasion to convince DEQ that other options might also be available and appropriate given the dictates of the Clean Water Act.

- VI. **Reimbursement of Costs** - The City must agree to pay all reasonable attorneys fees and costs incurred by the plaintiff up through the signing of the decree. Any dispute as to the reasonableness of these costs will be submitted to the court for determination.

NWEA should also be able to petition the court for ongoing costs incurred in monitoring the City's compliance with the decree.

State of Oregon
Environmental Quality Commission

Notice of Telephone Conference Meeting Change

The weekly Environmental Quality Commission legislative update telephone conference call originally scheduled for Tuesday, May 14, 1991, at 8:00 a.m. has been rescheduled for the same day at 4:00 p.m.

The public can listen to the meeting by speaker phone at the Department of Environmental Quality, 811 S. W. 6th Avenue, Portland, Oregon, Conference Room 3b.

For further information or an update on potential changes to the meeting schedule, contact the DEQ Director's Office at 229-5395.