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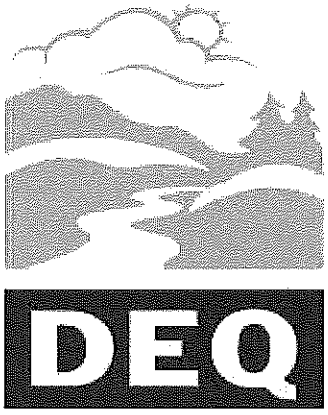
OREGON
ENVIRONMENTAL QUALITY
COMMISSION MEETING
MATERIALS 06/10/1993



State of Oregon
Department of Environmental Quality

A G E N D A

Environmental Quality Commission Meeting
June 10, 1993
DEQ Conference Room 3a
811 S. W. 6th Avenue
Portland, Oregon

Thursday, June 10, 1993: Regular Meeting beginning at 8:30 a.m.

Notes:

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

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

A. Approval of Minutes

B. Approval of Tax Credits

C. Guest Presentation by Oregon Department of Fish and Wildlife: Coastal Salmon Stock Status and Habitat Problems **(9:00 a.m.)**
This item is scheduled for 9:00 a.m. and will be considered as close to that time as possible. Items listed later on the agenda may be taken ahead of this item if time permits.

D. †Rule Adoption: Amendments to Yard Debris Rule

E. †Rule Adoption: Effect of a Permit Rule

F. Innovative Response Policy

G. Information Item: EPA PCB Grant Project

H. Work Session: Recycling (part 2) **(10:30 a.m.)**
This item is scheduled for 10:30 a.m. and will be considered as close to that time as possible. Items listed later on the agenda may be taken ahead of this item if time permits.

I. Guest Presentation: Oregon Values and Beliefs Study **(1:00 p.m.)**
This item is scheduled for 1:00 p.m. and will be considered as close to that time as possible. Items listed later on the agenda may be taken ahead of this item if time permits.

J. Information Item: Status Report on Permit Renewal for Pope & Talbot Pulp Mill at Halsey, Oregon

K. Commission Members Reports (Oral)

L. Director's Report (Oral)

M. Status Report on Legislative Proposals (Oral)

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

The Commission has set aside July 22-23, 1993, for their next meeting. The location has not been established.

Copies of staff reports for individual agenda items are available by contacting the Director's Office of the Department of Environmental Quality, 811 S. W. Sixth Avenue, Portland, Oregon 97204, telephone (503)229-5395, or toll-free 1-800-452-4011. Please specify the agenda item letter when requesting.

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

May 26, 1993

Approved	✓
Approved with Corrections	

Minutes are not final until approved by the EQC

ENVIRONMENTAL QUALITY COMMISSION

Minutes of the Two Hundred and Twenty Eighth Meeting
April 22-23, 1993

Joint Commission Meeting

The Environmental Quality Commission met jointly with the Oregon Transportation Commission and Land Conservation and Development Commission on April 22, 1993, at the Quality Inn in Salem, Oregon. The Commissions met for dinner at 6:30 p.m. followed by the meeting which began at about 7:10 p.m. Mike Hollern, Chair of the Transportation Commission, presided.

Governor Roberts initiated the discussions by urging the Commissions to look at a plan beyond individual agency roles that jointly addresses how Oregon will manage growth while maintaining livable communities. Duncan Wyse of the Oregon Progress Board presented a brief slide show on the Oregon Benchmarks and growth and livability in Oregon. Fred Hansen, Director of the Department of Environmental Quality, Dick Benner, Director of the Department of Land Conservation and Development, and Don Forbes, Director of the Department of Transportation, each gave a brief overview of their agency's concerns related to growth management.

The members of the three commissions then shared their views and concerns in an informal discussion. Bill Blosser, Chair of the Land Conservation and Development Commission, concluded the meeting by summarizing the discussions. He noted that the agencies understand the issues related to growth management and relationship between the agencies. He said that the legislature and business community are beginning to understand the issues; however, additional work is needed before the public can understand the relationship between population growth, transportation options, land use and environmental quality. It was suggested that each Commission discuss what could be done next. A joint work program with a single-issue focus was suggested as a possible follow-up action after the legislative session.

The joint meeting was adjourned at 9:00 p.m.

Regular Meeting

The Environmental Quality Commission regular meeting was convened at 8:30 a.m. on Friday, March 23, 1993, in Conference Room 3A, Oregon Department of Environmental Quality (DEQ), 811 S. W. Sixth Avenue in Portland, Oregon. The following commission members were present:

William Wessinger, Chair
Dr. Emery Castle, Vice Chair
Henry Lorenzen, Commissioner
(arrived at 10:40 a.m. due to Senate confirmation reappointment hearing in Salem)
Linda McMahan, Commissioner
Carol Whipple, Commissioner

Also present were Michael Huston, Assistant Attorney General, Oregon Department of Justice, Fred Hansen, Director, DEQ, and other DEQ staff.

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

Chair Wessinger called the meeting to order.

A. Approval of minutes.

Commissioner Whipple moved approval of the March 5, 1993, regular meeting and March 26, 1993, special telephone conference call meeting. Commissioner Castle seconded the motion. The regular and special telephone conference call meeting minutes were unanimously approved.

B. Approval of tax credits.

The Department recommended the following tax credit applications be approved. Additionally, an addendum to Agenda Item B recommended approval of field burning related Tax Credit Applications TC-3910, TC-3970 and TC-3973. Chair Wessinger indicated he had a minor conflict of interest with TC-3903 and would abstain from voting on that application.

Application Number	Applicant	Description
TC-3508	Gerald E. Phelan	1990 Allen 8827 straw rake.
TC-3509	Gerald E. Phelan	1990 Sunney Roadrunner straw handler.
TC-3510	Gerald E. Phelan	Freeman 370 T + 6 three string baler.
TC-3525	Gerald E. Phelan	1991 Roadrunner with hay squeeze.
TC-3749	Willamette Industries, Inc.	Collection and recovery system consisting of reinforced concrete structures, a trench drain line, and a collection sump.
TC-3844	Russell Oil Co.	Installation of two fiberglass tanks and fiberglass piping, spill containment basins, probes to hook up to existing tank monitoring system, line leak detectors, overfill alarm monitoring wells, sumps and automatic shutoff devices.
TC-3859	Hayworth Seed Warehouse, Inc.	Blue Sky baghouse and associated support equipment.
TC-3909	Verger Chrysler Plymouth Dodge, Inc.	Auto air conditioning recycling machine.
TC-3910	OR/PAC Feed & Forage, Ltd.	Four 144' x 124' x 22' pole construction, metal clad, grass seed straw storage sheds.
TC-3953	Gerald E. Phelan	1992 Roadrunner with hay squeeze.
TC-3956	Marshall's Automotive	Auto air conditioning recycling machine.
TC-3959	Younger Oil Co., Inc.	Installation of an impressed current cathodic protection system around four steel tanks and the piping to the cardlock portion of the facility.

Application Number	Applicant	Description
TC-3960	Younger Oil Co., Inc.	Installation of an impressed current cathodic protection system around three steel tanks and piping.
TC-3966	Bill Miller	John Deere 4630 tractor and flail chopper.
TC-3968	North Eugene Automotive	Auto air conditioning recycling machine.
TC-3969	Central Oregon Motors	Auto air conditioning recycling machine.
TC-3970	OR/PAC Feed & Forage, Ltd.	1992 Sunny D Oregon Roadrunner with hay squeeze.
TC-3971	Farmington Tire and Automotive	Auto air conditioning recycling machine.
TC-3972	Todd Ditchen	New Holland 1085 balewagon.
TC-3973	OR/PAC Feed & Forage, Ltd.	124' x 144' x 22' pole construction, metal clad, grass seed straw storage shed and a 125' x 144' x 22' straw press building.
TC-3974	Walser Enterprises	Two Freeman 370 SP balers.
TC-3975	Walser Enterprises	New Holland Model 1085 haystacker.
TC-3976	S & R Auto Repair	Auto air conditioning recycling machine.
TC-3980	Portland General Electric Company	Two ENDA-1220 continuous emission monitoring systems and display equipment.
TC-3985	Mountain Tech	Auto air conditioning recycling machine.

Application Number	Applicant	Description
TC-3987	Leathers Oil Co.	Installation of three STI-P3 tanks and double wall fiberglass piping, spill containment basins, line leak detectors, monitoring wells, sumps, Stage I and piping for Stage II vapor recovery and automatic shutoff valves.
TC-3988	Top-Flite Automotive	Auto air conditioning recycling machine.
TC-3989	Estergard Farms, Inc.	New Holland windrower, big wheel rake, and Rears bagger loafer.
TC-3990	Mechtronics	Auto air conditioning recycling machine.
TC-3992	Prestige Auto Repair	Auto air conditioning recycling machine.
TC-3994	Double J, Inc.	Auto air conditioning recycling machine.
TC-3995	F & Z Rentals Co.	Installation of two fiberglass and three STI-P3 tanks, fiberglass piping, spill containment basins, tank monitor system, line leak detectors, overfill alarm, monitoring wells, sumps, Stage II vapor recovery and automatic shutoff devices.
TC-4005	Colsper Corp.	Kilcom Baler, Model KI-5.
TC-4008	M & W Automotive	Auto air conditioning recycling machine.

Application Number	Applicant	Description
TC-4009	James Caputo	Installation of four STI-P3 tanks and double wall fiberglass piping, spill containment basins, tank monitor system, turbine leak detectors, overfill alarm, monitoring wells, sumps, Stage I & II vapor recovery and automatic shutoff devices.
TC-4014	L. P. Busch, Inc.	Installation of three single wall STI-P3 tanks and double wall enviroflex piping, spill containment basins, tank monitor, overfill alarms, monitoring wells, sumps, automatic shutoff devices, Stage I and piping for Stage II vapor recovery.
TC-2061	James River II, Inc.	Compacted clay landfill liner, leachate collection system, and groundwater monitoring wells.
TC-2382	Treasure Chest Advertising Company	Katec 2013 natural gas fired thermal afterburner and associated support equipment.
TC-3475	Boise Cascade Corporation	Surfacewater runoff and drainage collection system and a 24" clay landfill cap.
TC-3696	Container Recovery, Inc.	Twenty six tractor trucks used for collecting recyclable beverage containers.
TC-3903	Intel Corporation	Two storage tanks for waste phosphoric acid and associated piping, valves, and controls.

Commissioner Whipple questioned why grass seed straw storage sheds for one applicant was recommended for denial since the sheds were 0 percent allocable to pollution control and other credits for the same applicant were recommended for approval. John Fink, Tax Credit Program, and Brent Searle, Oregon Department of Agriculture, responded that with the method used to allocate cash flow to the claimed facilities and the fact that the storage sheds have considerably longer useful lives than the other facilities, the return on investment for the storage sheds would typically be higher.

In addition, the Commission asked why these were separate applications when they related to the same operation. Mr. Fink replied that the applications were evaluated separately since they were submitted as separate applications; if they had been submitted as one application, they would have been evaluated as one.

Action: Commissioner Castle moved approval of the Department's recommendations including the addendum for the tax credits listed above excluding TC-3903; Commissioner Whipple seconded the motion. The motion was unanimously approved (four yes votes, zero no votes).

Commissioner Castle moved approval of the Department's recommendation concerning TC-3903; Commissioner Whipple seconded the motion. The motion was approved with three yes votes, zero no votes and Chair Wessinger abstaining.

Mr. Downs indicated that Mr. Fink would be leaving the Department to take a position with the Oregon Economic Development Department. The Commission and Director thanked Mr. Fink for all his work and wished him well at his new position.

C. Rule adoption: Revisions to Open Field Burning Rules.

This item proposed an amendment to the existing field burning rules which would further reduce particulate emissions, reduce violations, lower administrative costs and increase revenue available for research and development. The Department recommended adoption of the proposed field burning rules as presented in Attachment A of the staff report.

Steve Greenwood, Air Quality Administrator, presented a brief overview of the field burning rule development process. He emphasized the need for the proposed amendments and commended the valuable contributions of the advisory committee. The advisory committee consisted of grass seed growers, the Oregon Seed Council, State Fire Marshal and Oregon Department of Agriculture (ODOA).

The Commission asked Steve Crane of the Air Quality Division to explain the difference between a field-by-field registration process and proposed acreage registration process. Mr. Crane stated the current procedure required growers to identify several months in advance the specific fields they planned to burn and method of sanitation to be used. He said this process led to grower frustration and increased administrative costs. The acreage registration system, on the other hand, allowed growers to register bulk acreage in one of three categories, open field burning, propane flaming and stack burning, and also allowed a delay in identifying each specific field until they were ready to burn.

The Commission asked if the Department was able to define the term *dry* as it pertains to grass seed straw. Mr. Crane replied the Department was working with the Seed Council to develop a non-technical definition.

Action: Commissioner Whipple moved approval of the Department's recommendation; Commissioner Castle seconded the motion. The motion was unanimously approved.

D. Rule adoption: Solid Waste Orphan Site Account Rules.

This item proposed rules to establish eligibility, selection criteria and conditions for use of solid waste Orphan Site Account funds. The rules focus on eligible sites (solid waste landfills), priority order of funding factors with environmental risk being top priority, conditions for use of funds as loans or grants and limitations on use of funds. The Department recommended approval of the proposed rules.

Director Hansen, Mary Wahl, Acting Administrator for the Environmental Cleanup Division (ECD), and Jeff Christensen of ECD explained that the proposed rules are required to enable implementation of the solid waste Orphan Site Account, enacted by the 1989 Legislature. The rules were developed with the assistance of a solid waste Orphan Site Account Work Group. Three public hearings were held. The rules proposed for adoption are the same as the rules submitted for public comment.

Commission members asked how difficult the rules would be to administer and if the $400,000 to be raised in Orphan Site Account fees (based on prior action) would enable cleanup of sites requiring action. Ms. Wahl indicated that staff anticipates the rules will not require additional full-time equivalent (FTE) personnel. It was also indicated that the $400,000 is an annual fee amount; with appropriate legislative expenditure limitation, can be used to support the sale of pollution control bonds, therefore, enabling at least $4,000,000 in state-financed project work. If possible, should the need arise, the solid waste fee could be increased with Commission approval to a $1,000,000 per year level.

Action: Commissioner McMahan moved approval of the Department's recommendation; Commissioner Whipple seconded the motion. The motion was unanimously approved.

Special Agenda Item: Findings for Intergovernmental Agreement between DEQ and Portland (the *Agreement*).

This item proposed to amend the Intergovernmental Agreement between the Department and City of Portland. This agreement, which covers the sewering of Mid-Multnomah County, contains a provision stating the Commission has found the Portland sewer development project will be self-supporting and self-liquidating. A number of changes in the agreement have recently been negotiated. Legal counsel has advised the Department that because of these changes, the Commission should once again formally make the finding that the (new) Portland sewer development project will be self-supporting and self-liquidating.

Action: Commissioner Castle moved that the proposed changes to the agreement summarized in Attachment A of the staff report be approved; Commissioner Whipple seconded the motion. The motion was unanimously approved.

E. Review and Approval of Bear Creek Sub-basin Nonpoint Source Pollution (NPS) Watershed Management Plans.

This item provided a review of Bear Creek Nonpoint Source Control Plans and Implementation and Compliance schedule. Designated Management Agencies (DMAs) have produced program plans for controlling NPS pollution. The program plans must be reviewed by the Commission. The plans focus on monitoring, public awareness, problem inventories and review of local ordinances. The Department recommended the Commission approve the plans in concept for a limited duration with the condition that DMAs adhere to a compliance and implementation schedule that details minimum requirements for additional information and program development.

The Commission briefly discussed background and current conditions. Additionally, they addressed issues about the Ashland sewage treatment plant (STP) and the affect that upgrades could have on creek flows.

The Commission considered testimony by Jim Hill, City of Medford, submitted in a memorandum dated April 22, 1993. The memorandum offered alternative language to be considered under *Additional Practices* (page 4) in the implementation and compliance schedule.

Action: After discussion, Commissioner Castle moved that the plans be approved, that the second paragraph on page 4 of the implementation and compliance schedule be revised to read as follows:

> Final decisions for large capital improvement projects/construction of treatment facilities may be delayed until the impact on Bear Creek of the construction of modifications to the Ashland sewage treatment plant have been evaluated and TMDLs adjusted accordingly. ~~[the City of Ashland sewage treatment plant facilities plan is finalized and construction is complete.]~~ However, an acceptable and firm schedule for making decisions should be identified and submitted to DEQ.

Commissioner Castle also moved that the schedule be adopted.
Commissioner Whipple seconded the motion. The motion was unanimously approved.

Director Hansen asked if the intent was to retain the last sentence in the second paragraph; Commissioner Castle replied yes. The Commission's action was consistent with the Department's recommendation of adopting Alternative 3 in the staff report.

H. Commission Members Reports.

There were no Commission member reports.

I. Director's report.

- Court Upholds DEQ Surcharge. The Oregon Supreme Court has affirmed the Court of Appeals and upheld the Department's solid waste surcharge on out-of-state waste. The fee is compensation for specific costs the State incurs, such as tax credits and increased environmental liability. The surcharge was contested by Oregon Waste Systems, Gilliam County and Columbia Resource Company. The petitioners have 90 days to appeal the ruling to the U. S. Supreme Court.

- Salt Caves Ruling Upheld. The Oregon State Appeals Court has upheld the EQC decision denying certification for the Klamath Falls' Salt Caves hydroelectric project. The Commission denied the certification because the project would increase the water temperature of the Klamath River in violation of the temperature standard.

- DEQ Helps Avert Tanker Spill. The Department worked cooperatively with the Governor and U. S. Coast Guard to ensure that a cargo ship taking on water was brought safely into Astoria. The ship had lost a hold cover in a storm and was taking on water when it requested permission to enter the Columbia River. Diesel, bunker C fuel oil, copper and Bentonite clay were on board. After conferring with the Governor, the Department made specific recommendations to the Coast Guard to assure that precautions were taken to minimize the possibility of an accident.

- Budget Status. A special House Appropriations Subcommittee was established to deal with the budgets of the DEQ and Department of Land Conservation and Development. Information hearings have been held, and the Department's bill have just been assigned to work sessions. The outcome will be referred to a Senate Ways and Means Committee.

- New Division Administrator Named. Rick Gates was selected as the new administrator of the Department's Laboratory Division. He brings a wealth of experience from his many years of work with DEQ.

- Hansen Appointments. Director Hansen has been appointed a member of the National Governors' Association Task Force on Implementation of the Clean Air Act. He will be meeting periodically with the EPA and will have an opportunity to influence EPA decisions on how the Clean Air Act will be implemented. Director Hansen has also been named as a member of the National Commission on Superfund.

- Hearing Authorizations

  1. Commitment to revise the State Implementation Plan to reflect changes in the Vehicle Inspection Program: reviews the timeline by which the Department will submit a complete State Implementation Plan (SIP) to the EPA.

     The Clean Air Act, as amended in 1990, establishes various deadlines for the EPA and states to complete specific tasks. The deadline for states to submit corrections to existing vehicle inspection programs was November 16, 1992. Since the EPA did not publish final guidance until November 5, 1992, the State of Oregon, through the Department, submitted a committal revision to the SIP in order to meet the November 16 deadline.

  2. Amendment to Charge for Yard Debris Collection Rule: requests the current rule be made permanent and that language be rewritten for clarity.

- The Commission asked for a briefing on the Pope & Talbot permit renewal status at the next meeting.

- Director Hansen provided the Commission with copies of a draft table outlining the process for joint agency action on the Newmont Mining proposal located in eastern Oregon.

- Director Hansen provided the Commission with copies of materials provided to the legislature regarding Departments rules that are more stringent than federal requirements.

F. City of Portland: Progress report on control of combined sewer overflows (CSO).

The City of Portland presented a report on the status of their actions to comply with the conditions of the SFO entered into with the Commission in mid-1991.

Mayor Vera Katz told the Commission the City was committed to meeting the timelines of the SFO. She indicated that the question remaining was how. Mayor Katz said the City was concerned about the economic impacts of the project, how clean the river can be made and at what cost. Mayor Katz talked about the efforts of the Clean River Committee and that of the committee's chair, Don McClave. She requested that Department staff attend the City's upcoming CSO hearings and suggested that major project phases be identified and assessed as to their effectiveness before subsequent phases proceed.

Mary Nolan, Bureau of Environmental Services Director, introduced **Bob Eimstad** of the Bureau. He provided a technical overview of the City's planning process. Mr. Eimstad noted that several consulting engineering firms are assisting the City on the project. He described the development of a sewer system model that allowed the City to forecast the results of various alternative control strategies and technology. He said the alternatives being evaluated by the City include plans that fully meet the requirements of the order as well as an option that would comply with the requirements in a draft federal policy for combined sewer overflow control (less stringent than SFO requirements).

Mr. Eimstad described several components that are a part of each alternative and will be implemented regardless of the final option selected. These are referred to as *cornerstone projects*. The cornerstone projects will reduce the volume of stormwater entering the City's combined stormwater and sanitary sewer system and will eliminate overflows to the Columbia Slough. He said the proposed plan will reduce heavy inflows by using sumps for stormwater and diverting surface streams from the sewer system. Mr. Eimstad said the benefits from this plan will reduce the maximum pollutant concentrations, frequency of discharges, duration of impacts in the river and impact the discharges have on beneficial uses. In turn, the community will benefit from improved infrastructures, other community projects will be enhanced, recreation and aesthetics of the river will be improved allowing for economic development. He added that the City will be adding wet weather capacity from Ross Island North to the Columbia Boulevard STP. Screening, sedimentation, disinfection and dechlorination will be used during wet weather conditions. Mr. Eimstad indicated the City will be seeking public involvement, developing a task force and providing creative alternatives workshops.

Don McClave, President of the Portland Chamber of Commerce, and Chair of the Clean Rivers Committee, spoke to the Commission. He said the committee's role was to look at the results of the hearings and City's proposals. He said the committee was composed of members with diverse interests and qualities. Mr. McClave indicated the people of Portland do not understand the CSO issue and would respond favorably when they do comprehend the issues. He said beneficial uses, the timing of those uses and the standards necessary to protect those uses need to be discussed.

Ms. Nolan told the Commission that the Bureau appreciated the Department's support, and the City wants to get started with work on the cornerstone projects. Chair Wessinger asked Ms. Nolan about the timelines of the project. She said the City would complete and submit their draft facility plan to the Department for review by July 1, 1993. Following receipt of technical comments from the Department, the City would have six months to complete and present a final facility plan for approval.

Commissioner Lorenzen expressed concern regarding the City's focus on the draft federal CSO policy which is not a federal standard. He urged the City not to move away from the SFO standards. He noted that if no benefit can be gained from high cost alternatives, review of the standards by the Commission may be warranted before money is spent. Ms. Nolan indicated the City would not risk beneficial uses but will look for a balance if there is no gain to beneficial use protection.

Director Hansen indicated that beneficial uses inferred fishable and swimmable water standards; when bypasses occur, beneficial uses are not protected. He said the City's goal of balancing and meeting minimum standards made sense considering the nature of the river; however, he said the issue was how often the river cannot be used. Director Hansen said that when bypasses do occur, an aggressive effort needs to be made to notify the public.

Commissioner Whipple said the City should want to be proud about reducing the number of bypasses. Mayor Katz said the City has developed tools to reach out to citizens; however, Mid-Multnomah County sewering and the CSO projects are costly. Commissioner Castle said that incremental benefits occur with incremental costs. He said that because Portland was the largest city in Oregon, it received more attention. Commissioner McMahan talked about the equity of citizens and asked how the standards compared to other regulated cities. She said beneficial uses were discussed in human terms; she commented there were other creatures to be considered as well.

Director Hansen indicated the SFO made it quite clear what the City must achieve. He said relaxing the standard is not an option unless it is examined by the Commission. He added the City must look beyond human health issues. Director Hansen said that phasing in the projects was a clear goal of the SFO. He stressed that the facility plan should present information on various alternatives that may allow the requirements of the SFO to be achieved at less cost.

G. Informational Item: DEQ and Future Power Generation Needs in Oregon.

Kevin Downing of the Air Quality Division provided a brief introduction and discussed the format of the presentation. Jeff King, Northwest Power Planning Council (NWPPC), spoke about the role of the NWPPC related to actual power plant development and provided a brief summary of power needs and resources for the Northwest.

Brian Finneran of the Department's Air Quality Division provided a brief introduction and statement of the Department's concerns. He said that power concerns are mostly an air quality issue with minor hazardous wastes and water quality concerns. Mr. Finneran discussed applicable air quality rules which include National Ambient Air Quality Standards (NAAQS), Prevention of Significant Deterioration (PSD) increments, visibility, Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER). He talked about the air pollutants emitted by power plants, provided a map of areas where new power plants are proposed and the sensitive areas involved.

Mr. Finneran also spoke about the recent Energy Facility Siting Council rule change and talked about the primary concerns the changes will have on the Department. Those concerns include an increase in the permitting workload, need for Cumulative Impact Studies (Columbia River Gorge National Scenic Area, non-attainment areas, Class I areas, PSD increments) and the cumulative impacts in northeastern Oregon from forest health slash burning. He indicated the secondary impacts of interruptible gas supply and increased gas prices would increase woodstove and oil use. The discussion included land use compatibility and related noise issues.

Mike Grainey, Oregon Department of Energy (ODOE), provided an overview of the ODOE permitting process for power plants and its relation to the DEQ process.

Larry Miller of the Department's Air Quality Division provided a discussion of the air quality permitting status and workload concerns. Mr. Miller spoke about the permitting process for power plants, its relation to the ODOE process, status of current applications being reviewed by the Department and the typical problems delaying approval. He provided a chart showing potential power plants in the state. Mr. Miller indicated that current and potential workload increases from reviewing applications from the State of Washington would occur. He said the Department had considered proposing a surcharge on applicants to supply needed technical resources. Additionally, extra air quality modeling may be needed. He said the Department has also proposed that ODOE screen applicants.

Mr. Finneran indicated the Department was evaluating a surcharge fee for powerplant applicants to address need for additional resources for prompt application processing. He asked for feedback from the Commission on such a proposal. He also asked the Commission to support a recommendation to the NWPPC for a cumulative air quality impact study. He further asked the Commission if the Department should consider rule revisions related to these issues and if the Department should redirect funds from its budget to apply to the economic analysis needed for redesignating the Columbia Gorge to a Class I area.

Mr. King, NWPPC, spoke to the Commission again, describing the environmental impacts considered such as why non-polluting resources (wind and solar power) are being developed in California and not Oregon. He briefly talked about siting issues: who has control, factors affecting siting, existing guidance and suggestions for future siting guidance. Mr. King also discussed what the NWPPC can do to promote forest slash in northeastern Oregon as an available energy resource.

Mike Grainey, ODOE, talked about future power plants screened by ODOE, siting issues and if the ODOE has the ability to limit applications to the minimum wattage needed.

Peter Lund, Pacific Gas Transmission Company, told the Commission the company he represented owned the interstate pipeline through Oregon and into California. He said he was confident that enough gas supplies would be available in the future.

Gail Achterman told the Commission she appreciated the efforts of the agencies to coordinate permit processing. She said that it would create problems to hold up applications until cumulative impact analyses could be made.

J. Status Report on Legislative Proposals.

Olivia Clark spoke told the Commission that all of the Department's bills had received hearings. She said issues are moving slowly but steadily. She indicated the first hearing on State Revolving Funds leverage had occurred. The emission fee bill was not recommended, and she expected the House to go forward with Representative Tom Brian's task force recommendations. Ms. Clark said that Chair Wessinger and Commissioner Castle testified on the stringency bill (House Bill 2662). That bill was amended by adding language requiring the Department to report back to the 1995 legislature about rules that were more stringent than the federal government. The rules would require legislative approval or would become null and void one year later. She indicated the Agricultural Practices Act authorizes the ODOA to develop water quality management plans when agricultural practices affect groundwater and Total Maximum Daily Load water areas. ODOA will be authorized to charge fees and enforce the rules.

There was no future business, and the meeting was adjourned at 2:45 p.m.

Environmental Quality Commission

☐ Rule Adoption Item
☐ Action Item
☐ Information Item

Agenda Item B
June 10, 1993 Meeting

Title:

Approval of Tax Credit Applications

Summary:

Attachment A of the staff report presents the Department's evaluation and recomendation for certification of 16 tax credit applications with a total facility cost of $18,518,518.41, as follows:

- 4 Water Quality facilities with a total facility cost of $17,773,068.
- 3 Underground Storage Tank facilities with a total facility cost of $477,494.
- 4 Field Burning related applications recommended by the Department of Agriculture with a total facility cost of $254,703.41.
- 5 Refrigeration coolant recycling facilities with a total facility cost of $13,253.

Three of the applications have facility costs exceeding $250,000, all of which are Water Quality facilities. These applications have been reviewed by independent contractors selected by the Department. The contractor review statements are provided with the application review reports.

Department Recommendation:

Approve issuance of tax credit certificates for 16 applications as presented in Attachment A of the staff report.

Report Author	Division Administrator	Director

May 24, 1993

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

State of Oregon
Department of Environmental Quality Memorandum†

Date: May 25, 1993

To: Environmental Quality Commission

From: Fred Hansen, Director

Subject: Agenda Item B, June 10, 1993 EQC Meeting

Approval of Tax Credit Applications

Statement of the Need for Action

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

Tax Credit Application Review Reports:

Application Number	Applicant	Description
TC 3764	Precision Castparts Corp.	Acid neutralization and control equipment for a hazardous wastewater treatment facility
TC 3919	Texaco Refining and Marketing, Inc.	Installation of five fiberglass underground storage tanks, fiberglass piping, spill containment basins, line leak detectors, in-tank gauges, float vent valves, overfill alarms and monitoring wells. Also, Stage I vapor recovery equipment and piping for Stage II vapor recovery.

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

Application Number	Applicant	Description
TC 3945	Texaco Refining and Marketing, Inc.	Installation of five fiberglass underground storage tanks, fiberglass piping, spill containment basins, line leak detectors, in-tank gauges, float vent valves, overfill alarms and monitoring wells. Also, Stage I vapor recovery equipment and piping for Stage II vapor recovery.
TC 3947	Texaco Refining and Marketing, Inc.	Installation of five fiberglass underground storage tanks, fiberglass piping, spill containment basins, line leak detectors, in-tank gauges, float vent valves, overfill alarms and monitoring wells. Also, Stage I vapor recovery equipment and piping for Stage II vapor recovery.
TC 3978	Eastman Heating and Sheetmetal, Inc.	Refrigeration coolant recovery and recharge equipment.
TC 4003	Fly-By-Night Refrigeration	Refrigeration coolant recovery and recharge equipment
TC 4010	Vachter Spray Service, Inc.	24' x 74' x 150' truss-T grass seed storage building.
TC 4011	Cecil E. Roth	24' x 80' x 118' stick-on-stud, metal wall grass seed storage building.
TC 4015	C. W. Stuck	Automobile air conditioner coolant recovery and recycling equipment.
TC 4016	Dan and JoAnn Keeley	22' x 70' x 95' steel structure, galvanized sheeted grass seed storage building.
TC 4019	East Amazon Auto	Automobile air conditioner cfc substitute coolant recovery, recycling and recharge equipment.
TC 4021	J & S Farms	22' x 104' x 204' pole construction, metal clad grass seed storage building.

Application Number	Applicant	Description
TC 4047	Beale Automotive Repair	Automobile air conditioner coolant recovery and recycling equipment.

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

Application Number	Applicant	Description
TC 3902	American Industrial Service	Dissolved Air Flotation (DAF) wastewater pretreatment facility.
TC 3941	Precision Castparts Corp.	Water pollution control facility to comply with pollution standards for the discharge of radioactive thorium 232 into the sanitary sewer of Portland.
TC 3964	James River Paper Company, Inc.	Modifications to pulp and paper mill bleach plant and bleaching process to comply with water pollution standards for dioxin and AOX.

Background

There are no notable issues in addition to the approval of the tax credit applications for this report.

Authority to Address the Issue

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

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

Alternatives and Evaluation

None.

Summary of Any Prior Public Input Opportunity

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

Conclusions

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

- Proposed June 10, 1993 Pollution Control Tax Credit Totals:

	Certified Costs*	# of certificates
Air Quality	0	0
CFC	13,253	5
Field Burning	254,703	4
Hazardous Waste	0	0
Noise	0	0
Plastics	0	0
Solid Waste - Recycling	0	0
Water Quality	17,773,068	4
Underground Storage Tanks	477,494	3
Solid Waste - Landfills	0	0
TOTAL	$ 18,518,518	16

1993 Calendar Year Totals through April 30, 1993.

	Certified Costs*	# of certificates
Air Quality	835,198	6
CFC	58,534	20
Field Burning	1,487,878	17
Hazardous Waste	0	0
Noise	0	0
Plastics	6,660	1
Solid Waste - Recycling	1,384,399	9
Water Quality	1,351,134	7
Underground Storage Tanks	517,936	7
Solid Waste - Landfills	4,964,981	3
TOTAL	$ 10,606,720	70

*These amounts represent the total facility costs, rounded to the nearest whole dollar. 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.

Recommendation for Commission Action

It is recommended that the Commission approve certification for the tax credit applications as presented in Attachment A of the Department Staff Report.

Intended Followup Actions

Notify applicants of Environmental Quality Commission actions.

Attachments

A. Pollution Control Tax Credit Application Review Reports.

Reference Documents (available upon request)

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

Approved:

Section:

Division:

Report Prepared By: Charles Bianchi

Phone: 229-6149

Date Prepared: May 24, 1993

Charles Bianchi
TCJUNE.EQC
May 24, 1993

Application No. T-3764

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Precision Castparts

Large Structural Business Operation

4600 S.E Harney Drive

Portland, OR 97206

The applicant owns and operates an investment casting facility in Portland, Oregon.

Application was made for tax credit for a hazardous waste wastewater treatment facility.

2. Description of Facility

The facility is the acid neutralization and flow control equipment associated with the leach line pH system. The facility consists of a curb, sump and sump pump, grating, piping, trench, pH meter and a coated sump and trench.

Claimed Facility Cost: $34,613

(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. Installation commenced on August 30, 1989.

b. Installation of the facility was completed on May 28, 1990.

c. The facility was placed into operation on May 29, 1990.

d. The application for final certification was received by the Department on March 24, 1992, within two years of substantial completion of the facility.

e. The application was found to be technically complete and was filed on May 3, 1993.

4. Evaluation of Application

a. The facility is eligible because the sole purpose of the facility is to reduce a substantial quantity of D001 acid hazardous waste, and to eliminate the prospect of discharging the acid into the environment. Hazardous waste reduction is accomplished by the use of the treatment to eliminate hazardous waste as defined in ORS 466.005.

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.

The applicant is treating and containing acid wastewater to reduce the probability that untreated acid wastewater is discharged into the environment. The average annual cash flow for this activity is negative. As a result, using Table 1, OAR 340-16-030, the return on investment is 0% and the percent allocable is 100%.

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

The alternative method which was considered for pollution control was to leave the leach line in its existing location and to rebuild the leach sump and drains. This option was rejected in favor of installing a new facility to treat hazardous waste. The Department believes that the proposed facility is an acceptable method of achieving the pollution prevention objective.

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 income or savings from the purchase of this facility.

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 pollution prevention.

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 control and prevent the inadvertent release and substantially reduce the quantity of acid hazardous waste produced.

This prevention and reduction is accomplished by the use of treatment of hazardous waste as defined in ORS 466.005.

c. The facility appears to comply 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 $34,613 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3764.

Gary Calaba:GC
U:\HWPD\RPT\ZB12300
(503) 229-6534
April 20, 1993

Application No. TC-3919

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Texaco Refining & Marketing, Inc.
1800 SW First Suite 180
Portland, OR 97201

The applicant owns and operates a gasoline dispensing station at 4419 SW Multnomah, Portland OR 97219, facility no. 859.

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

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are five fiberglass underground storage tanks, fiberglass piping, spill containment basins, line leak detectors,, in tank gauges, float vent valves, overfill alarms, monitoring wells and Stage I vapor recovery equipment and piping for Stage II vapor recovery.

Claimed facility cost $ 162,106
(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 was substantially completed on February 8, 1991 and placed into operation on February 8, 1991. The application for certification was submitted to the Department on December 11, 1992, within two years of the completion date. The application was determined complete and filed on March 16, 1993.

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 bare steel underground storage tanks with no corrosion protection and no spill and overfill prevention or leak detection equipment. These tanks were removed.

To respond to requirements established 12-22-88, the applicant installed:

1) For corrosion protection - Fiberglass underground storage tanks and piping.

2) For spill and overfill prevention - Spill containment basins, overfill alarms and float vent valves.

3) For leak detection - In tank gauges, line leak detectors and monitoring wells.

The applicant also installed Stage I vapor recovery equipment and piping for Stage II vapor collection.

The applicant reported that soil testing was performed at the time of tank removal and contamination was found. The cleanup is ongoing.

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 costs claimed by the applicant ($162,106) 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 offer the best pollution control. The methods chosen are acceptable for meeting the requirements of federal regulations.

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

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

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

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

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

	Eligible Facility Cost	Percent Allocable		Amount Allocable
Corrosion Protection:				
Fiberglass tanks & piping	$ 59,234	69	% (1)	$ 40,871
Connectors & flex boots	1,896	100		1,896
Spill & Overfill Prevention:				
Spill containment basins	1,207	100		1,207
Float vent valves	913	100		913
Overfill alarms	431	100		431
Leak Detection:				
In tank gauges	5,488	90	(2)	4,939
Line leak detectors	7,481	100		7,481
Monitoring wells	603	100		603
Labor & materials (Includes Stage I & Stage II vapor recovery equipment	84,853	100		84,853
Total	$ 162,106	88	%	$ 143,194

(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 $59,234 and the bare steel system is $18,364, the resulting portion of the eligible tank and piping cost allocable to pollution control is 69%.

(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 $162,106 with 88% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3919.

Mary Lou Perry:ew
(503) 229-5731
April 28, 1993

Application No. TC-3945

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Texaco Refining & Marketing, Inc.
1800 SW First Suite 180
Portland, OR 97201

The applicant owns and operates a gasoline dispensing station at 519 NE Broadway, Portland OR 97232, facility no. 848.

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

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are five fiberglass underground storage tanks, fiberglass piping, spill containment basins, line leak detectors,, in tank gauges, float vent valves, overfill alarms, monitoring wells and Stage I vapor recovery equipment and piping for Stage II vapor collection.

Claimed facility cost $ 166,775
(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 was substantially completed on March 31, 1991 and placed into operation on March 31, 1991. The application for certification was submitted to the Department on December 28, 1992, within two years of the completion date. The application was determined complete and filed on March 16, 1993.

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 bare steel underground storage tanks with no corrosion protection and no spill and overfill prevention or leak detection equipment. There was also one fiberglass tank with no spill and overfill or lead detection. All five tanks were removed.

To respond to requirements established 12-22-88, the applicant installed:

1) For corrosion protection - Fiberglass underground storage tanks and piping.

2) For spill and overfill prevention - Spill containment basins, overfill alarms and float vent valves.

3) For leak detection - In tank gauges, line leak detectors and monitoring wells.

The applicant also installed Stage I vapor recovery equipment and piping for Stage II vapor collection.

The applicant reported that soil testing was performed at the time of tank removal and contamination was found. The cleanup is ongoing.

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 costs claimed by the applicant ($166,775) 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 offer the best pollution control. The methods chosen are acceptable for meeting the requirements of federal regulations.

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

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

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

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

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

	Eligible Facility Cost	Percent Allocable		Amount Allocable
Corrosion Protection:				
Fiberglass tanks & piping	$ 68,921	72	% (1)	$ 49,623
Connectors & flex boots	2,017	100		2,017
Spill & Overfill Prevention:				
Spill containment basins	1,006	100		1,006
Float vent valves	616	100		616
Overfill alarms	380	100		380
Leak Detection:				
In tank gauges	5,488	90	(2)	4,939
Line leak detectors	7,307	100		7,307
Monitoring wells	560	100		560
Labor & materials (Includes Stage I & Stage II vapor recovery equipment	80,480	100		80,480
Total	$ 166,775	88	%	$ 146,928

(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 $68,921 and the bare steel system is $19,050, the resulting portion of the eligible tank and piping cost allocable to pollution control is 72%.

(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 $166,775 with 88% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3945.

Mary Lou Perry:ew
(503) 229-5731
April 28, 1993

Application No. TC-3947

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Texaco Refining & Marketing, Inc.
1800 SW First Suite 180
Portland, OR 97201

The applicant owns and operates a gasoline dispensing station at 17997 SW Lower Boones Ferry Rd., Portland OR 97223, facility no. 846.

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

2. Description of Claimed Facility

The claimed pollution control facilities described in this application are five fiberglass underground storage tanks, fiberglass piping, spill containment basins, line leak detectors,, in tank gauges, float vent valves, overfill alarms, monitoring wells and Stage I vapor recovery equipment and piping for Stage II vapor collection.

Claimed facility cost $ 148,613
(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 was substantially completed on March 7, 1991 and placed into operation on March 7, 1991. The application for certification was submitted to the Department on December 28, 1992, within two years of the completion date. The application was determined complete and filed on March 16, 1993.

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 bare steel underground storage tanks with no corrosion protection and no spill and overfill prevention or leak detection equipment. These tanks were removed.

To respond to requirements established 12-22-88, the applicant installed:

1) For corrosion protection - Fiberglass underground storage tanks and piping.

2) For spill and overfill prevention - Spill containment basins, overfill alarms and float vent valves.

3) For leak detection - In tank gauges, line leak detectors and monitoring wells.

The applicant also installed Stage I vapor recovery equipment and piping for Stage II vapor collection.

The applicant reported that soil testing was performed at the time of tank removal and contamination was found. The cleanup was completed on December 24, 1991.

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 costs claimed by the applicant ($148,613) 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 offer the best pollution control. The methods chosen are acceptable for meeting the requirements of federal regulations.

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

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

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

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

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

	Eligible Facility Cost	Percent Allocable		Amount Allocable
Corrosion Protection:				
Fiberglass tanks & piping	$ 58,126	68	% (1)	$ 39,526
Connectors & flex boots	2,373	100		2,373
Spill & Overfill Prevention:				
Spill containment basins	1,006	100		1,006
Float vent valves	600	100		600
Overfill alarms	380	100		380
Leak Detection:				
In tank gauges	5,488	90	(2)	4,939
Line leak detectors	7,068	100		7,068
Monitoring wells	560	100		560
Labor & materials (Includes Stage I & Stage II vapor recovery equipment	73,012	100		73,012
Total	$ 148,613	87	%	$ 129,464

(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 $58,126 and the bare steel system is $18,499, the resulting portion of the eligible tank and piping cost allocable to pollution control is 68%.

(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 $148,613 with 87% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3947.

Mary Lou Perry:ew
(503) 229-5731
April 28, 1993

Application No. TC-3978

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Eastman Heating & Sheet Metal Inc.
111 Fiske St.
Silverton, OR 97381

The applicant owns and operates a heating and air conditioning sales and service in Silverton, Oregon.

Application was made for tax credit for an air pollution control facility which is owned by the applicant.

2. Description of Facility

Facility is a machine which removes and cleans air conditioner or commercial refrigerant 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 eight years.

Claimed Facility Cost: $2,000.00
(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.

Installation of the facility was substantially completed on April 10, 1992. The facility was placed into operation on April 10, 1992. The application for final certification was submitted to the Department on February 10, 1993, within two years of substantial completion of the facility. The application was found to be complete on May 5, 1993.

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 Environmental Protection Agency 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 Section 608 of the 1990 Clean Air Act Amendments. Section 608 prohibits the venting of a Class I or Class II ozone depleting substance in the course of maintaining, servicing, repairing, or disposing of an appliance or industrial process refrigeration.

The EPA has specified standards equipment manufactured before January 1, 1993 would have to meet to be grandfathered under the EPA's planned regulations. The standards require the equipment be capable of achieving a vacuum able to sustain either four or twenty-five inches of Mercury. High pressure equipment will need to sustain a four inch vacuum. Low pressure equipment will need to sustain a twenty-five inch vacuum. The claimed facility meets these standards.

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 refrigerant to the environment, thereby meeting EPA regulations requiring capture of this air contaminant. Second, it provides a means to recover waste coolant for reuse or sale to a recycling facility.

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 $2.00/pound. The applicant estimated an annual coolant recovery rate of 10 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/or reuse coolant. The applicant may use the recycled coolant in customer equipment. In this case the savings are tied to the displaced cost of virgin coolant. Alternately, the applicant could sell the coolant to an industrial coolant purification center. In this case the savings to the applicant are tied to the sales price of recovered coolant.

However, for this applicant 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.

A distinct portion of this air conditioning and refrigerant coolant recovery and recycling equipment makes an insignificant contribution

to the principal purpose of the claimed facility. This coolant recovery equipment has the capability to return (recharge) coolant to automobile air conditioning systems. Recharge capabilities in coolant recovery and recycling equipment is not required by state or federal law. The additional expense incurred in the purchase of equipment with recharge capabilities is not allocable to pollution control. The Department estimates the additional expense incurred is $700.00.

The actual cost of the facility properly allocable to pollution control as determined by using these factors is 65%.

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 EPA to reduce air pollution.

c. The facility complies with Department standards and rules.

d. The portion of the facility cost that is properly allocable to pollution control is 65%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $2,000.00 with 65% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3978.

BKF

May 5, 1993

Application No. TC-4003

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Fly-By-Night Refrigeration
13050 Kirkwook Rd. NW
Salem, OR 97304

The applicant owns and operates a refrigeration repair service in Salem, Oregon.

Application was made for tax credit for an air pollution control facility which is owned by the applicant.

2. Description of Facility

Facility is a machine which removes and cleans air conditioner or commercial refrigerant 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 five years.

Claimed Facility Cost: $2,750.00
(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.

Installation of the facility was substantially completed on June 10 1992. The facility was placed into operation on June 10, 1992. The application for final certification was submitted to the Department on March 4, 1993, within two years of substantial completion of the facility. The application was found to be complete on May 5, 1993.

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 Environmental Protection Agency 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 Section 608 of the 1990 Clean Air Act Amendments. Section 608

prohibits the venting of a Class I or Class II ozone depleting substance in the course of maintaining, servicing, repairing, or disposing of an appliance or industrial process refrigeration.

The EPA has specified standards equipment manufactured before January 1, 1993 would have to meet to be grandfathered under the EPA's planned regulations. The standards require the equipment be capable of achieving a vacuum able to sustain either four or twenty-five inches of Mercury. High pressure equipment will need to sustain a four inch vacuum. Low pressure equipment will need to sustain a twenty-five inch vacuum. The claimed facility meets these standards.

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 refrigerant to the environment, thereby meeting EPA regulations requiring capture of this air contaminant. Second, it provides a means to recover and clean waste coolant for reuse.

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 $7.57/pound. The applicant estimated an annual coolant recovery rate of 40 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:

- 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/or reuse coolant. The applicant may use the recycled coolant in customer equipment. In this case the savings are tied to the displaced cost of virgin coolant. Alternately, the applicant could sell the coolant to an industrial coolant purification center. In this case the savings to the applicant are tied to the sales price of recovered coolant.

However, for this applicant 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 EPA to reduce air pollution.

c. The facility complies with Department standards 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 $2,750.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-4003.

BKF

May 5, 1993

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Gary Vachter, President
Vachter Spray Service, Inc.
17124 French Prairie Road NE
St. Paul OR 97137

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

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

2. Description of Claimed Facility

The facility described in this application is a 24' x 74' x 150', truss-t, grass seed straw storage building, located at 17124 French Prairie Road NE, St. Paul, Oregon. The land and buildings are owned by the applicant.

Claimed facility cost: $69,076
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 290 acres under perennial grass seed cultivation. Over the last five years the applicant has gradually eliminated open field burning of his grass seed acreage. The alternatives to open field burning selected by the applicant include chopping and plowing under the straw when the crop is rotated and trading the straw with a custom baler for straw removal.

The custom baler "who has disposed of the baled straw in the past has informed the applicant that the straw will not be taken unless it is kept dry in a storage building." The applicant states that "[U] unless the applicant constructs the storage building, they will be forced to go back to open field burning and burning wet stacks of straw in the field. "The applicant affirms that the facility's only purpose is to provide an alternative to 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 June 26, 1992. The application for final certification was found to be complete on March 25, 1993. The application was submitted within two years of substantial completion of the facility.

5. Evaluation of Application

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

b. Eligible Cost Findings

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

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

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

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

   There is no annual percent return on the investment as the applicant demonstrates a 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 $1,135 to annually maintain and operate the facility. These costs were considered in the return on investment calculation.

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

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

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

6. Summation

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

   b. The facility is eligible under ORS 468.150 as an approved alternative method for field sanitation and straw utilization and disposal that reduces a substantial quantity of air pollution as defined in ORS 468A.005.

   c. The facility complies with DEQ statutes and rules.

   d. The portion of the facility that is properly allocable to pollution control is 100%.

7. The Department of Agriculture's Recommendation

   Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $69,076, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-4010.

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

jb:bm4010
March 25, 1993

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Cecil E. Roth
4551 Howell Prairie Road NE
Silverton OR 97381

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

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

2. Description of Claimed Facility

The facility described in this application is a 24' x 80' x 118' stick on stud, metal wall, grass seed straw storage building, located at 4551 Howell Prairie Road NE, Silverton, Oregon. The land and buildings are owned by the applicant.

Claimed facility cost: $63,251
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 1,030 acres under perennial grass seed cultivation. During the last five years the applicant has gradually reduced open field burning to a level of less than 300 acres registered annually and less than 200 acres open field burned annually. The alternatives to open field burning selected by the applicant include chopping and plowing under the straw when the crop is rotated and trading the straw with a custom baler for straw removal.

The custom baler "who has disposed of the baled straw in the past has informed the applicant that the straw will not be taken unless it is kept dry in a storage building." The applicant states that [U] unless the applicant constructs the storage building, they will be forced to go back to open field burning and burning wet stacks of straw in the field." The applicant affirms that the facility's only purpose is to provide an alternative to 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 July 31, 1991. The application for final certification was found to be complete on March 25, 1993. The application was submitted within two years of substantial completion of the facility.

5. Evaluation of Application

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

b. Eligible Cost Findings

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

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

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

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

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

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

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

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

   There is an increase in operating costs of $1,982 to annually maintain and operate the facility. These costs were considered in the return on investment calculation.

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

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

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

6. Summation

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

   b. The facility is eligible under ORS 468.150 as an approved alternative method for field sanitation and straw utilization and disposal that reduces a substantial quantity of air pollution as defined in ORS 468A.005.

   c. The facility complies with DEQ statutes and rules.

   d. The portion of the facility that is properly allocable to pollution control is 100%.

7. The Department of Agriculture's Recommendation

   Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $63,251, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-4011.

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

jb:bm4011
March 25, 1993

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

C.W. Stuck
110 Lancaster Dr. SE
Salem, OR 97301

The applicant owns and operates a full service station in Salem, Oregon.

Application was made for tax credit for an air pollution control facility which is owned by the applicant.

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 seven years.

Claimed Facility Cost: $2,003.00
(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.

Installation of the facility was substantially completed on March 28, 1991 The facility was placed into operation on March 28, 1991. The application for final certification was submitted to the Department on March 17, 1993, within two years of substantial completion of the facility. The application was found to be complete on May 5, 1993.

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 virgin coolant at $6.75/pound. The applicant estimated an annual coolant recovery rate of 100 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. The applicant may use the recycled coolant in customer vehicles. In this case the savings are tied to the displaced cost of virgin coolant. Alternately, the applicant could sell the coolant to a second shop where the coolant is used. In this case the savings to the applicant are tied to the sales price of recycled coolant.

However, for this applicant 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 $2,003.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-4015.

BKF

May 5, 1993

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Dan and JoAnn Keeley
5975 Buyserie Road NE
St Paul OR 97137

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

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

2. Description of Claimed Facility

The facility described in this application is a 22' x 70' x 95', steel structure, galvanized sheeted, grass seed straw storage building, located at 5975 Buyserie Road NE, St. Paul, Oregon. The land and buildings are owned by the applicant.

Claimed facility cost: $40,611
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicants farm on 340 acres; of which approximately 175 acres are under perennial grass seed cultivation. The applicants have eliminated open field burning since the 1990 season. The alternatives to open field burning selected by the applicant include plowing under the straw when the crop is rotated and trading the straw with a custom baler for straw removal.

Stacking the straw in the fields has proven unsatisfactory due to rain damage that makes the straw unmarketable. The storage building protects the straw from inclement weather preserving its suitability as a supplemental feed source.

4. Procedural Requirements

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

Construction of the facility was substantially completed on March 15, 1993. The application for final certification was found to be complete on March 25, 1993. The application was submitted within two years of substantial completion of the facility.

5. Evaluation of Application

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

b. Eligible Cost Findings

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

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

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

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

The actual cost of claimed facility ($40,611) divided by the average annual cash flow ($172) equals a return on investment factor of 231. Using Table 1 of OAR 340-16-030 for a life of 30 years, the annual percent return on investment is 0%. Using the annual percent return of 0% and the reference annual percent return of 17%, 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 $1,328 to annually maintain and operate the facility. These costs were considered in the return on investment calculation.

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

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

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

6. Summation

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

   b. The facility is eligible under ORS 468.150 as an approved alternative method for field sanitation and straw utilization and disposal that reduces a substantial quantity of air pollution as defined in ORS 468A.005.

   c. The facility complies with DEQ statutes and rules.

   d. The portion of the facility that is properly allocable to pollution control is 100%.

7. The Department of Agriculture's Recommendation

   Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $40,611, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-4016.

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

jb:bm4016
March 26, 1993

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

East Amazon Auto
3475 E. Amazon
Eugene, OR 97405

The applicant owns and operates a general auto repair shop in Eugene, Oregon.

Application was made for tax credit for an air pollution control facility which is owned by the applicant.

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 five years.

Claimed Facility Cost: $4,250.00
(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.

Installation of the facility was substantially completed on November 30, 1992. The facility was placed into operation on November 30, 1992. The application for final certification was submitted to the Department on March 26, 1993, within two years of substantial completion of the facility. The application was found to be complete on May 5, 1993.

4. Evaluation of Application

a. The facility is eligible because the sole purpose of the facility is to reduce air pollution. This reduction is accomplished by capturing and/or recycling air contaminants, as defined in ORS 468.275.

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, J2210, 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 $10.00/pound. The applicant estimated an annual coolant recovery rate of 100 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:

- Electricity consumption of machine
- Additional labor to operate machine
- Machine maintenance costs
- 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. The applicant may use the recycled coolant in customer vehicles. In this case the savings are tied to the displaced cost of virgin coolant. Alternately, the applicant could sell the coolant to a second shop where the coolant is used. In this case the savings to the applicant are tied to the sales price of recycled coolant.

However, for this applicant 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.

A distinct portion of this automobile air conditioning coolant recovery and recycling equipment makes an insignificant contribution to the principal purpose of the claimed facility. This coolant recovery equipment has the capability to return (recharge) coolant to automobile air conditioning systems. Recharge capabilities in coolant recovery and recycling equipment is not required by state or federal law. The additional expense incurred in the purchase of equipment with recharge capabilities is not allocable to pollution control. The Department estimates the additional expense incurred is $700.00.

The actual cost of the facility properly allocable to pollution control as determined by using these factors is 84%.

5. Summation

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

b. The facility is eligible for tax credit certification in that the sole purpose of the facility is to 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 84%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $4,250.00 with 84% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-4019.

BKF

May 5, 1993

State of Oregon
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

J & S Farms
15561 River Road NE
St. Paul Oregon 97137

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

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

2. Description of Claimed Facility

The facility described in this application is a 22' x 104' x 204' pole construction, metal clad, grass seed straw storage building, located at 15571 River Road NE, St. Paul, Oregon. The land and buildings are owned by the applicant.

Claimed facility cost: $81,765.41
(Accountant's Certification was provided.)

3. Description of farm operation plan to reduce open field burning.

The applicant has 500 acres of perennial grass seed under cultivation. Since 1989, the applicant has gradually eliminated registration of acreage for open field burning and has not open field burned any grass seed acreage the last three years.

The applicant bales and stacks the grass seed straw and gives it away to other individuals for personal use or marketing. However, the majority of the baled straw had to be stack burned because of rain damage. The applicant constructed the grass seed straw storage building to provide adequate dry storage promoting full use of the straw and eliminating any form of open 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 July 15, 1992. The application for final certification was found to be complete on April 7, 1993. The application was submitted within two years of substantial completion of the facility.

5. Evaluation of Application

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

b. Eligible Cost Findings

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

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

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

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

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

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

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

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

   There is an increase in operating costs of $2,594 to annually maintain and operate the facility. These costs were considered in the return on investment calculation.

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

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

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

6. Summation

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

b. The facility is eligible under ORS 468.150 as an approved alternative method for field sanitation and straw utilization and disposal that reduces a substantial quantity of air pollution as defined in ORS 468A.005.

c. The facility complies with DEQ statutes and rules.

d. The portion of the facility that is properly allocable to pollution control is 100%.

7. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of $81,765, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-4021.

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

jb:bm4021
April 7, 1993

Application No. TC-4047

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Beale Automotive Repair
744 Diamond Ave.
Medford, OR 97501

The applicant owns and operates an automotive service shop in Medford, Oregon.

Application was made for tax credit for an air pollution control facility which is owned by the applicant.

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 five years.

Claimed Facility Cost: $2,250.00
(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.

Installation of the facility was substantially completed on May 15, 1992. The facility was placed into operation on May 15, 1992. The application for final certification was submitted to the Department on April 19, 1993, within two years of substantial completion of the facility. The application was found to be complete on May 5, 1993.

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 $6.66/pound. The applicant estimated an annual coolant recovery rate of 50 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:

- Electricity consumption of machine
- Additional labor to operate machine
- Machine maintenance costs
- 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. The applicant may use the recycled coolant in customer vehicles. In this case the savings are tied to the displaced cost of virgin coolant. Alternately, the applicant could sell the coolant to a second shop where the coolant is used. In this case the savings to the applicant are tied to the sales price of recycled coolant.

However, for this applicant 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 $2,250.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-4047.

BKF

May 5, 1993

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

American Industrial Service
5225 SE 26th Avenue
Portland, Oregon 97202

The applicant owns and operates an industrial laundry facility in Portland, Oregon.

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

2. Description of Facility

The claimed facility is a Dissolved Air Floatation (DAF) system designed to remove oil and grease from wastewater prior to discharge to the Portland municipal sewerage system, in compliance with an industrial pretreatment permit issued by the City of Portland.

Claimed Facility Cost:	$304,604
Less: ineligible costs	<$1,725>
Eligible Facility Cost:	$302,339

(Accountant's Certification was provided).

A cost allocation review of this application by an independent contractor has identified $1,725 in costs unrelated to the facility and claimed by the applicant. The eligible facility cost has been reduced for these ineligible costs.

3. Procedural Requirements

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

The facility met statutory deadlines in that installation of the facility was substantially completed on July 15, 1992, and the application for certification was found to be complete on November 25, 1992, 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 City of Portland's industrial pretreatment program. Portland's industrial pretreatment program is required by the Department and the Federal Environmental Protection Agency, to reduce water pollution. The requirement is to comply with industrial pretreatment permit number 444-003, issued by the City of Portland.

Prior to installation of the claimed facility, the applicant was unable to comply with the permit limits. A compliance schedule was imposed by the City of Portland requiring installation of

facilities to bring the applicant into compliance. On November 19, 1992, City staff confirmed that the claimed facility has been installed and that a Report on Final Compliance was expected from the applicant which would end the City's enforcement action.

A report on final compliance was received from the City of Portland on April 12, 1993.

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 percent allocable determined by using this factor would be 100%.

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

No income is derived from operation of the claimed facility, and the annual percent return on investment is 0%.

The percent allocable determined by using this factor would be 100%.

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

There are no 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 are no savings from the facility. The cost of maintaining and operating the facility is $75,078.00 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.

a) The Environmental Quality Commission has directed that tax credit applications at or above $250,000 go through an additional departmental accounting review to determine if costs were properly allocated. This review was performed under contract with the Department by the accounting firm of Symonds, Evans & Larson.

The cost allocation review performed by Symonds, Evans & Larson identified $1,725 in costs unrelated to the facility and claimed by the applicant. The eligible facility cost has been reduced by the amount of these ineligible costs.

Other than the adjustment for ineligible costs, the cost allocation review of this application has identified no issues to be resolved and confirms the cost allocation as submitted in the application.

b) 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 portion of the facility cost 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 City of Portland, which operates an industrial pretreatment program required by the Department, and the federal Environmental Protection Agency to reduce water pollution.

c. The facility complies with the City of Portland's permit conditions.

d. An independent accounting firm under contract with the Department has concluded that no further review procedures be performed on T-3902 (see attached accountant's report).

e. 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 $302,339 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3902.

(George F. Davis):(GFD)
(T-3902)
(503) (229-6385 x 242)
(April 13, 1993)

SYMONDS, EVANS & LARSON
CERTIFIED PUBLIC ACCOUNTANTS

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

At your request, we have performed certain agreed-upon procedures with respect to American Industrial Service's (the Company's) Pollution Control Tax Credit Application No. T-3902 (the Application) filed with the State of Oregon, Department of Environmental Quality (DEQ) for the Water Pollution Control Facility in Portland, Oregon (the Facility). The Application had a claimed Facility cost of $304,064 (as amended). Our procedures, findings and conclusion are as follows:

Procedures:

1. We read the Application, the Oregon Revised Statutes on Pollution Control Facilities Tax Credits – Sections 468.150 through 468.190 (the Statutes), and the Oregon Administrative Rules on Pollution Control Tax Credits – Sections 340-16-005 through 340-16-050 (OAR's).

2. We reviewed certain documents which support the Application.

3. We discussed the Application, the Statutes and OAR's with certain DEQ personnel, including John Fink and George Davis.

4. We discussed certain aspects of the Application with David Harris and Valine Hooker of the Company.

5. We toured the Facility with Mr. Harris.

6. We requested that Mr. Harris confirm the following:

   a) There were no related parties or affiliates of the Company which had billings which were included in the Application.

   b) There were no internal costs of the Company included in the Application.

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c) The capacity of the Facility is adequate for the Company's present operations and does not include significant capacity for potential future operations.

d) The costs of the Facility related to landscaping, road improvements, etc. (ORS - Section 468.155(2)(d)) were excluded from the Application.

e) The Company presently derives no income or cost savings from operating the Facility.

f) The treated water from the Facility is not currently being reused by the Company and if such water is reused in the future, the Company will need to incur significant additional capital expenditures to make this process possible.

g) The costs incurred in removing the underground storage tank (UST) were necessary in order to install the Facility.

h) The cost of supplies included in the Application related to the installation of the Facility and did not include ongoing operating supplies.

i) No previously existing equipment was sold as a result of the installation of the Facility.

j) The forklift included in the costs of the Application is used 100% for activities related to the Facility.

k) The costs included in the Application for cleaning, pumping and transferring sump sludge were necessary to keep contractors on schedule and were significantly more expensive than would be required in the Company's normal annual cleaning.

Findings:

1. through 5.

No matters came to our attention that caused us to believe that the Application should be adjusted, except for $1,725 of costs billed to the Company for electrical work which were unrelated to the Facility. As a result, the amended allowable costs for the Application should be reduced to $302,339.

6. Mr. Harris confirmed in writing that such assertions were true and correct.

Conclusion:

Because the above procedures do not constitute an audit conducted in accordance with generally accepted auditing standards, we do not express an opinion on any of the items referred to above. In connection with the procedures referred to above, no matters came to our attention that caused us to believe that the specified items should be adjusted, except as noted above. Had we performed additional procedures or had we conducted an audit of the financial statements of the Company in accordance with generally accepted auditing standards, other matters might have come to our attention that would have been reported to you. This report relates only to the items specified above and does not extend to any financial statements of the Company, taken as a whole.

This report is solely for the use of the State of Oregon Environmental Quality Commission and Department of Environmental Quality in evaluating the Company's Pollution Control Tax Credit Application with respect to its Water Pollution Control Facility in Portland, Oregon and should not be used for any other purpose.

Symonds, Evans & Larson

January 11, 1993

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Precision Castparts Corp.
Investment Foundry
4600 S.E. Harney Drive
Portland, Oregon 97206

The applicant owns and operates an investment casting facility in Portland, Oregon.

An application was made for a tax credit for a water pollution control facility.

2. Description of Facility

Precision Castparts Corp. operates an investment foundry producing titanium castings for aerospace, commercial, and medical applications.

The applicant is requesting a tax credit for a water pollution control facility designed to reduce the discharge of radioactive thorium 232 into the sanitary sewer.

Radioactive wastewater containing thorium 232 is generated in the manufacture and removal of shells used as molds in the investment casting process. The water pollution control system collects the wastewater and first passes it through a series of settling weirs to remove heavy solids. From here, and dependent on quality, it passes through an oil-water separator or is fed directly to one of two holding tanks. From the holding tanks, wastewater is pumped through an activated charcoal filter before introduction into a series of pH adjustment and filtration steps.

Effluent from treatment is discharged to the sanitary sewer at concentrations less than 0.7 pico curies per liter (greater than a 99.99% reduction through treatment). Radioactive solids generated in treatment are eventually shipped to Hanford for burial.

The treatment system also includes monitoring and control systems including pH, flow, pressure, conductivity, and temperature measurements.

Claimed Facility Cost:	$2,033,046
Less: Nonallowable Costs:	(113,789)
Total Eligible Facility Cost	$1,919,257

An Accountant's Certification was provided. A cost allocation review of this application by an independent contractor has identified $113,789 in costs that could not be supported. The eligible facility cost has been reduced for these costs.

3. Procedural Requirements

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

The facility met statutory deadlines in that construction of the facility was substantially completed on May 1, 1992, and the application for certification was found to be complete on December 31, 1992, 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 prevent water pollution.

The City of Portland is required to administer a pretreatment program to satisfy conditions of its National Pollutant Discharge Elimination System (NPDES) permit, which is issued by the Department. The NPDES program was established to achieve goals outlined in the federal Clean Water Act. The two primary goals outlined in the Act were the

elimination of pollutant discharge by 1985 and the achievement of an interim water quality level that would protect fish, shellfish, and wildlife while providing for recreation in and on the water wherever attainable. Towards satisfying these goals, the Department has established a series of water quality standards outlined in Division 41 of Chapter 340 of the Oregon Administrative Rules. Specifically, OAR 340-41-445 (2)(m) states that, "radioisotope concentrations shall not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard." The requirement by the City of Portland on Precision Castparts Corp. to install pollution controls for its radioactive discharge is in response to the City's commitments under its Department-issued NPDES permit and, in general, the requirements of the Clean Water Act.

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 percent allocable determined by using this factor would be 100%.

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

As noted above, the facility does not recover or convert waste products

into a salable or usable commodity, and no income is derived from the operation of the water pollution control system. Therefore, the estimated annual percent return on the investment is zero.

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

The facility indicated that alternatives considered included reverse osmosis, electro-dialysis, and biofix. A technical review of each alternative indicated they were not feasible due to scale formation and effluent composition.

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

There are no savings or increase in costs as a result of the facility modification.

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.

(a) The Environmental Quality Commission has directed that tax credit applications at or above $250,000 go through an additional accounting review to determine if costs were properly allocated. This review was performed under contract by the accounting firm of Symonds, Evans & Larson. Other than the adjustment for nonallowable facility costs, the cost allocation review of this application has identified no

issues to be resolved.

(b) 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 prevent water pollution.

c. The facility complies with DEQ statutes and rules and the conditions of the City of Portland (Industrial Wastewater Permit No. 400-007).

d. An independent accounting firm under contract with the Department has concluded that no further review procedures be performed on Tax Credit Application No. TC-3941 (see attached review report).

e. 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 $1,919,257 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-3941.

Doug Jones:DTJ
TC-3941
(503) 229-6385 (x248)
December 31, 1992

SYMONDS, EVANS & LARSON
CERTIFIED PUBLIC ACCOUNTANTS

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

At your request, we have performed certain agreed-upon procedures with respect to Precision Castparts Corp.'s (the Company's) Pollution Control Tax Credit Application No. 3941 (the Application) filed with the State of Oregon, Department of Environmental Quality (DEQ) for the Water Pollution Control Facility in Milwaukie, Oregon (the Facility). The Application has a claimed Facility cost of $2,033,046. Our procedures, findings and conclusion are as follows:

Procedures:

1. We read the Application, the Oregon Revised Statutes on Pollution Control Facilities Tax Credits – Sections 468.150 through 468.190 (the Statutes), and the Oregon Administrative Rules on Pollution Control Tax Credits – Sections 340-16-005 through 340-16-050 (OAR's).

2. We reviewed certain documents which support the Application.

3. We discussed the Application, the Statutes and OAR's with certain DEQ personnel, including John Fink and George Davis.

4. We discussed certain components of the Application with Mike Kuiawa, James Ellis and Melissa Marshall of the Company.

5. We toured the Facility with Mr. Kuiawa and Mr. Ellis.

6. We requested that Mr. Kuiawa and Mr. Ellis confirm the following:

   a) There were no related parties or affiliates of the Company which had billings which were included in the Application.

   b) The capacity of the Facility is adequate for the Company's present operations and does not include significant capacity for potential future operations.

   c) The treated water from the Facility is not reused by the Company.

   d) In accordance with ORS 468.155(2)(e), the Facility is not a "replacement or reconstruction of all or a part of any facility for which a pollution control facility certificate has previously been issued. . ."

   e) All supply costs included in the Application related to the installation of the Facility and did not include ongoing operating supplies.

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f) All internal labor costs included in the Application related directly to the construction of the Facility and were not related to maintenance and repairs.

g) The $61,077 in parts that were included in the Application and were issued from the Company's storeroom (at standard cost) were used directly in the construction of the Facility and approximate the actual cost of the parts.

Findings:

1. through 5.

No matters came to our attention that caused us to believe that the Application should be adjusted, except for $113,789 of non-allowable costs related to the following:

Internal labor charged to work order #875-53836-5 for which the Company was unable to provide supporting documentation	$ 6,266
Safety showers	2,250
Chairs and bookshelves	3,135
Cash discounts taken	1,319
Journal entry in September 1990 for which the Company was unable to provide supporting documentation	5,470
Journal entry in November 1990 for which the Company was unable to provide supporting documentation	3,364
Charges from Lightning Corp. for which the Company was unable to provide supporting documentation	4,420
Start-up supplies	37,802
Magnesium chloride system	23,363
Rewire of electrical system	26,400
Total non-allowable costs	$ 113,789

As a result, the allowable costs for the Application should be reduced to $1,919,257.

6. Mr. Kuiawa and Mr. Ellis confirmed in writing that such assertions were true and correct.

SYMONDS, EVANS & LARSON
CERTIFIED PUBLIC ACCOUNTANTS

Conclusion:

Because the above procedures do not constitute an audit conducted in accordance with generally accepted auditing standards, we do not express an opinion on any of the items referred to above. In connection with the procedures referred to above, no matters came to our attention that caused us to believe that the specified items should be adjusted, except as noted. Had we performed additional procedures or had we conducted an audit of the financial statements of the Company in accordance with generally accepted auditing standards, other matters might have come to our attention that would have been reported to you. This report relates only to the items specified above and does not extend to any financial statements of the Company, taken as a whole.

This report is solely for the use of the State of Oregon Environmental Quality Commission and Department of Environmental Quality in evaluating the Company's Pollution Control Tax Credit Application with respect to its Water Pollution Control Facility in Milwaukie, Oregon and should not be used for any other purpose.

Symonds, Evans + Larson

May 10, 1993

State of Oregon
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

James River Paper Company, Inc.
Wauna Mill
Clatskanie, Oregon 97016

The applicant owns and operates a bleached kraft pulp and paper mill in Wauna (near Clatskanie), Oregon.

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

2. Description of Facility

The claimed facility consists of modifications to the bleach plant in the mill to allow compliance with the dioxin and AOX limits in the applicant's NPDES permit.

Prior to modifying the bleach plant, the applicant employed a five-stage bleach process to bleach pulp to the desired degree of whiteness. The four stages were:

First stage (C stage)	molecular chlorine (Cl_2) addition
Second stage (E_o stage)	caustic addition with oxygen
Third stage (H_1 stage)	hypochlorite addition
Fourth stage (H_2 stage)	hypochlorite addition
Fifth stage (D stage)	chlorine dioxide addition

The previous bleaching process produced dioxin and AOX at levels in excess of the limits specified in the applicant's NPDES permit. In order to meet the limits, the applicant modified the bleach plant to allow reduced use of molecular chlorine and to eliminate the use of hypochlorite. Much of the chlorine and all of the hypochlorite have been replaced by chlorine dioxide. This approach is referred to as "chlorine dioxide substitution", in that chlorine dioxide is substituted for chlorine and hypochlorite. The resulting bleach process comprises four stages, as follows:

First stage (C+D stage)	chlorine+chlorine dioxide addition
Second stage (E_{op} stage)	caustic+oxygen+hydrogen peroxide addition
Third stage (D_1 stage)	chlorine dioxide addition
Fourth stage (D_2 stage)	chlorine dioxide addition

Revising the bleach process entailed making a number of changes to the bleach plant; the major changes are briefly summarized below:

- Since only four bleaching stages are used, the previous fourth stage bleaching tower was removed from service.

- Substitution of chlorine dioxide in the first stage requires thickening the pulp prior to the first stage. The flow route of pulp was changed to allow use of the old fourth stage washer to thicken the pulp.

- The first stage bleaching tower was modified by the addition of a pre-tube to extend the contact time between the pulp and the bleaching chemicals added at that stage, and also to allow better control of the

temperature of the first stage.

- The third stage bleaching tower was modified by the addition of a pre-tube to extend the contact time between the pulp and the bleaching chemicals added in that stage.

- Three of the thick stock pumps, used to pump the pulp from stage to stage, were replaced. This was necessary because the bleaching modifications added pressure requirements that the old pumps were incapable of handling.

- The chlorine dioxide generator was replaced by a much larger chlorine dioxide generator. This was necessary because of the much greater use of chlorine dioxide in the revised bleaching process.

- A number of other changes or additions were made to support the major changes described above; these include additional chemical storage tanks, chillers to supply chilled water to the chlorine dioxide generator, and the control system for the new chlorine dioxide generator.

The applicant has submitted information that indicate that these changes will allow the applicant to comply with both the dioxin and AOX limits specified in the applicant's NPDES permit.

The applicant claimed a facility cost of $16,621,066. The Department determined that $688,603 of that amount are for ineligible costs, and an independent accounting review identified an additional $362,744 that are for ineligible costs. The Claimed Facility Cost has been reduced by these amounts.

Claimed Facility Cost: $15,516,859 (adjusted)
(Accountant's Certification was provided).

3. Procedural Requirements

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

The facility met statutory deadline in that construction and installation of the facility was substantially completed in August, 1992, and the application for certification was found to be complete on May 10, 1993, 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 reduce water pollution. The requirement is to comply with the dioxin and AOX limits established in the applicant's NPDES permit.

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed 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 percent allocable determined by using this factor would be 100%.

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

The application for this tax credit was received prior to February 1, 1993, and thus is not affected by the Commission's Temporary Rule that revised the percent annual return on investment calculation. The method of determining percent annual return on investment that was in effect at the time the application was received was used.

Although the claimed facility is integral to the operation of the applicant's pulp and paper mill, the claimed facility itself does not produce a salable product, and no income is derived from the claimed facility. Operational costs are associated with the claimed facility; as a result of the modifications made by the applicant, the operational costs of the facility were increased by approximately $1.5 million to $2.1 million per year. The annual percent return on investment in this case is 0 (zero).

The percent allocable determined by using this factor would be 100%.

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

Alternative methods exist to achieve the pollution control objective that was achieved by the claimed facility. However, it is the Department's opinion that the applicant chose the lowest cost approach for achieving the pollution control objective.

The applicant considered the following approaches:
a. high substitution of chlorine dioxide
b. staged addition of chlorine
c. oxygen delignification
d. replacement of digesters

The option chosen by the applicant was a., high substitution of chlorine dioxide, as the least expensive approach that also would meet the dioxin and AOX limits set in the NPDES permit.

Staged addition of chlorine is less expensive than the chosen option, but this approach has not demonstrated an ability to reduce AOX. Oxygen delignification alone cannot achieve the full dioxin reduction required, and would require chlorine dioxide substitution as well in some bleaching stages. Overall, costs to install oxygen delignification would be higher. Replacement of digesters would allow better delignification during the digestion process, but would still require chlorine dioxide substitution; the cost of this option is much higher than the cost of the chosen option.

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 was increased by approximately $1.5 million to $2.1 million annually.

In making this determination, the Department considered savings from the claimed facility itself, as well as savings that may occur in other parts of the mill as a result of the modifications made to the claimed facility (bleach plant).

The claimed facility does not allow the applicant to use less expensive raw materials; it does not reduce staffing needs or operating costs of the claimed facility or any other part of the mill (operating costs of the claimed facility are increased); it may potentially reduce the cost of treating wastewater, but such reduction is much less than the increase in operating costs for the claimed facility. The Department believes the effect of the claimed facility is to substantially increase the operating costs of the claimed facility without producing any substantial savings in any part of the mill.

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.

a) The Department identified certain costs claimed by the applicant that are not eligible. One claimed cost was increased as a result of the Department's review.

Claimed costs determined to be ineligible are for the following four items: methanol storage tank spray guards, ineligible because they are strictly for worker protection in the event of leaks; No. 4 Paper Machine Modifications, ineligible because they do not contribute to the control of pollutants (even though necessitated by the bleach process changes); part of the transformer building and its pilings, ineligible because part of the building is used for purposes not related to pollution control, and because the pilings were designed to support future construction; and spares, ineligible because the facility must be in use, and spares by definition are not in use.

One claimed cost was increased as a result of our review. This cost is for a building used to house chillers and for talc storage. The part of the building that houses the chillers is considered eligible, but the talc storage area is not. The applicant had originally deducted part of the cost of the building to account for the talc storage. However, in reviewing this item it was found that the amount deducted was too high, and the eligible portion of the cost of the chiller/talc storage building was increased.

Ineligible costs:	
Methanol storage tank spray guards	<$ 4,235>
No. 4 Paper Machine modifications	<$203,960>
Transformer Building and Pilings	<$150,043>
Spares	<$438,247>
Total ineligible costs	<$796,485>
Eligible cost increase:	
Chiller Building	$107,882
Net ineligible costs:	
Total ineligible costs	<$796,485>
Eligible cost increase	$107,882
Net ineligible costs	<$688,603>
Adjusted eligible costs:	
Facility cost claimed by applicant	$16,621,066
Net ineligible costs	<$688,603>
Adjusted facility cost	$15,932,463

b) The Department considered possible increases in production from the claimed facility and/or the mill as a whole. The applicant informed us that the modifications to the claimed facility (bleach plant) have increased the capacity of the bleach plant from 38-42 ADUT/hr (air-dried unbleached tons per hour) to 45-50 ADUT/hr. If the bleach plant were a limiting factor in the production of paper, this increase in capacity would allow the mill to produce and sell more paper. However, the bleach plant is not the limiting factor in the applicant's mill. Other factors, both inside and outside the mill, that limit the production of paper are:
recovery boiler (most limiting factor);
digester capacity; and
market demand for pulp and paper.

The recovery boiler was and still is the most limiting factor in the mill. Prior to the bleach plant modifications described herein, the bleach plant was the second most limiting factor. Following the bleach plant modifications, the digester capacity became the second most limiting factor, with the bleach plant now third. If the limitation imposed by the recovery boiler were removed, the production rate could be increased up to the digester capacity, whereas previously it would have been limited by the bleach plant itself.

Conceivably then, the mill could increase paper production if the recovery boiler limitation could be removed. In effect, the recovery boiler disposes of the mill's black liquor and recovers chemicals for reuse. The limitation could be removed by either replacing the recovery boiler (at a very high cost) or exporting black liquor to another site that had excess recovery capacity. Exporting black liquor might be feasible if the pulp and paper market conditions result in high enough demand (and profits) to outweigh the cost of exporting the black liquor.

Perhaps the most controlling factor of all is the market demand for pulp and paper. At this time the market demand is not as high as it has been in the past. If the nation's (and region's) economies improve, the pulp and paper market may also improve. Offsetting any such improvement is the increased demand for recycled paper products. Increased production of recycled paper products reduces the demand for virgin pulp, as is produced at the applicant's mill. Although this is by no means an exhaustive economic analysis, it does not appear that economic conditions will allow the applicant to use the increased capacity of the bleach plant to increase the production of pulp and paper.

The Department concludes that the increased capacity of the claimed facility is not useable in the foreseeable future, and has made no adjustment to the eligible cost of the facility based on this factor.

c) The Department considered the salvage value of one major piece of process equipment that was taken out of service as a result of the bleach plant modification. This piece is the old 4th stage bleaching tower. The Department does not believe that the old 4th stage bleaching tower has any net salvage value.

Demolition or disassembly of the old 4th stage tower would be difficult and costly, since the tower is nested among the other bleaching towers. The tower will likely be left in place.

The salvage value of other pieces of process equipment that were taken out of service was considered during an accounting review performed by an accounting firm under contract to the Department (Section d, below). The salvage value of the old thick stock pumps and old chlorine dioxide generator is included in the additional ineligible costs identified in Section d.

d) The Environmental Quality Commission has directed that tax credit applications at or above $250,000 go through an additional departmental accounting review to determine if costs were properly allocated. This review was performed under contract with the Department by the accounting firm of Symonds, Evans and Larson.

The cost allocation review identified an additional $415,604 of ineligible charges. The claimed facility cost has been reduced by this amount:

Adjusted facility cost, from Section 5(a), above:	$15,932,463
Additional ineligible costs:	<$ 415,604>
Final adjusted facility cost:	$15,516,859

The cost allocation review determined that no further review procedures need be performed.

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 water pollution. The requirement is to comply with the dioxin and AOX limits established in the applicant's NPDES permit.

c. The facility is able to comply with permit conditions.

d. An independent accounting firm under contract with the Department has concluded that no further review procedures be performed on T-3964 (see attached review report).

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 $15,516,859 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. T-3964.

(George Davis):(GFD)
(T-3964)
(503) (229-6385 x 242)
(May 24, 1993)

DRAFT

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

At your request, we have performed certain agreed-upon procedures with respect to James River Paper Co., Inc.'s (the Company's) Pollution Control Tax Credit Application No. 3964 (the Application) filed with the State of Oregon, Department of Environmental Quality (DEQ) for the Water Pollution Control Facility in Wauna, Oregon (the Facility). The Application has a claimed Facility cost of $15,932,463 (as amended by the Company and DEQ). Our procedures, findings and conclusion are as follows:

Procedures:

1. We read the Application, the Oregon Revised Statutes on Pollution Control Facilities Tax Credits – Sections 468.150 through 468.190 (the Statutes), and the Oregon Administrative Rules on Pollution Control Tax Credits – Sections 340-16-005 through 340-16-050 (OAR's).

2. We reviewed certain documents which support the Application.

3. We discussed the Application, the Statutes and OAR's with certain DEQ personnel, including Mike Downs, Chuck Bianchi, George Davis and John Fink.

4. We discussed certain components of the Application with numerous Company personnel including the following:

Mike Woods	Bob Menzia
Ron Eldredge	Judy Holt
Dennis Gwynn	Jim Conrad
Bob Alton	Owen Nelson
Doug Campbell	Paul Carr
Tracy Trahan	

5. We toured the Facility with Mr. Woods and Mr. Eldredge.

6. We requested that Company personnel confirm the following:

   a) There were no related parties or affiliates of the Company which had billings (other than internal labor) which were included in the Application.

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b) The treated water from the Facility is not reused by the Company.

c) In accordance with ORS 468.155(2)(e), the Facility is not a "replacement or reconstruction of all or a part of any facility for which a pollution control facility certificate has previously been issued..."

d) All supply costs included in the Application related to the installation of the Facility and did not include ongoing operating supplies.

e) All costs included in the adjusted/final Application related directly to the construction of the Facility and were not related to maintenance and repairs.

f) It would have been more costly to convert/upgrade the existing chlorine dioxide generator controls and panel board than to acquire and install the new DCS system for the new chlorine dioxide generator.

g) The Application excluded all costs related to the acquisition and installation of the new DCS system used to control the bleach plant.

h) Of the $41,518 in costs related to the sewerline - AFE Item 1120, approximately 50% ($20,759) of such costs were incurred to repair a portion of the sewerline that was damaged during construction.

i) Other than $1,350 in costs related to the 3" steamline for the C-stage CLO2 mixer, there were no costs included in the Application related to materials/processes that are not being utilized in the existing/completed Facility.

j) The remaining salvage value (net of any removal and selling costs) of prior equipment that is no longer being used in the Facility is estimated to be no more than $52,860.

k) All of the adjusted costs of the Application relate directly to pollution control, and none of the adjusted costs included in the Application relate to costs that would have been incurred by the Company to upgrade/maintain the Facility in the normal course of business.

l) The increase in operating costs related to the new Facility (primarily related to chemicals) significantly exceeds any decrease in costs (e.g., maintenance and repairs, etc.) which have resulted from upgrading certain components of the new Facility.

m) Because of the uncertainty associated with future pulp prices, wood prices and black liquor export availability, it is not reasonable to project that revenues from potential increases in production at the new bleach plant will exceed the related increase in costs.

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n) The original bleach/hypo elimination plant was built in the late 1960's, and, therefore, still had a useful life of 10 to 20 years at the time the Facility was constructed. The old chlorine dioxide generator was built in the mid-1970's and also had a remaining useful life of 10 to 20 years.

Findings:

1. through 5.

No matters came to our attention that caused us to believe that the Application should be adjusted, except for $415,604 of non-allowable costs related to the following:

Description	Amount
Start-up costs	$ 42,442
Repair of sewer line (50% estimate by Mr. Menzia)	20,759
Exhaust fan for potential chlorine leak	2,650
Testing and inspection	45,434
Trailer Rent	15,596
Clerical	34,804
Corporate engineering charges in excess of actual cost	76,824
Safety incentive - Harder	8,400
Safety incentive - ECCO	13,730
Spare transmitter	1,123
A/R preparation costs	29,379
Instrument shop escape door	7,446
Replacement of damaged H_2O line which was damaged when a tank unrelated to the project blew up	1,579
Replacement of chiller building door damaged by a contractor in construction	1,456
Repair of bekaplast flooring	6,234
Repair of rusted out C-stage tower	28,453
Repair of rusted out D1 tower	25,085
75 feet of 3" steamline for C-stage CLO_2 mixer which was not used in the final process ($6 x 3" x 75')	1,350
Estimated salvage value of equipment that is no longer being used in the Facility	52,860
Total of non-allowable costs	$ 415,604

As a result, the adjusted costs for the Application should be reduced to $15,516,859.

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

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Conclusion:

Because the above procedures do not constitute an audit conducted in accordance with generally accepted auditing standards, we do not express an opinion on any of the items referred to above. In connection with the procedures referred to above, no matters came to our attention that caused us to believe that the specified items should be adjusted, except as noted. Had we performed additional procedures or had we conducted an audit of the financial statements of the Company in accordance with generally accepted auditing standards, other matters might have come to our attention that would have been reported to you. This report relates only to the items specified above and does not extend to any financial statements of the Company, taken as a whole.

This report is solely for the use of the State of Oregon Environmental Quality Commission and Department of Environmental Quality in evaluating the Company's Pollution Control Tax Credit Application with respect to its Water Pollution Control Facility in Wauna, Oregon and should not be used for any other purpose.

May ___, 1993

Environmental Quality Commission

☐ Rule Adoption Item
☐ Action Item
☐ Information Item

Agenda Item D
June 10 , **1993 Meeting**

Title:

Amendments to Charge for Yard Debris Collection Rule, OAR 340-90-190

Summary:

The proposed amendments to the yard debris collection rule (OAR 340-90-190) remove the sunset date and clarify existing language.

The current yard debris collection rule allows local governments to charge for the first unit of yard debris collection only as part of the basic solid waste and recycling collection fee. Because of the unique nature of yard debris collection, local governments are allowed to charge an additional fee for additional yard debris collection beyond the first unit. The fee charged for yard debris collection must be less than that charged for the same amount of solid waste.

The current rule has a sunset date of June 1, 1993, and the proposed rule eliminates the sunset clause.

Other proposed amendments clarify the intent of the present rule and simplify the rule language. None of these amendments represent substantive or policy changes.

Department Recommendation:

It is recommended that the Commission adopt the rule amendments regarding charge for the collection of yard debris as presented in Attachment A of the Department Staff Report.

William R Bree	Stephanie Hallock	Fred Hansen
Report Author	Division Administrator	Director

May 19, 1993

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

State of Oregon
Department of Environmental Quality Memorandum†

Date: June 10, 1993

To: Environmental Quality Commission

From: Fred Hansen, Director

Subject: Agenda Item D, June 10, 1993, EQC Meeting

Amendments to Charge for Yard Debris Collection Rule, OAR 340-90-190

Background

On March 15, 1993 the Director authorized the Hazardous and Solid Waste Division to proceed to a rulemaking hearing on proposed rules which would amend OAR 340-90-190 to remove the sunset date of June 1, 1993 and to clarify existing language.

Pursuant to the authorization, hearing notice was published in the Secretary of State's Bulletin on April 1, 1993. On March 30, 1993 notice was mailed to the mailing list of those persons who have asked to be notified of rulemaking actions, and to a mailing list of persons known by the Department to be potentially affected by or interested in the proposed rulemaking action.

A Public Hearing was held April 26, 1993 at 8:00 a.m. in Room 3A of the Department's headquarters at 811 S.W. Sixth Avenue in Portland, Oregon with Linda Hayes serving as Presiding Officer. The Presiding Officer's Report (Attachment C) summarizes the oral testimony presented at the hearing.

Written comment was received through April 30, 1993 at 4:00 p.m. A list of written comments received is included as Attachment D. (A copy of the comments is available upon request.)

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

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

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

Issue this Proposed Rulemaking Action is Intended to Address

Oregon Administrative Rule (OAR) 340-90-190 is necessary to allow local governments to charge a fee for the collection of yard debris without being in violation of ORS 459A.070. The proposed changes to OAR 340-90-190 are to remove the sunset clause, Section (10), which provides that the existing rule is effective only until June 1, 1993. Local governments feel that the present rule is useful and necessary and have asked that the sunset clause be removed so that the rule remain in effect.

The language of the present rule, OAR 340-90-190, was developed to provide direction to local governments on when they could charge for yard debris collection service. The rule allows local government to charge for the first unit of yard debris only as part of the charge for basic solid waste collection service. Local governments are allowed to charge an additional fee for collection of additional quantities of yard debris. The present rule still leaves some room for different interpretations of what is the "first unit" of yard debris. Its language also leads to some confusion on how charges for yard debris service to small, multi-family dwellings can be levied.

Relationship to Federal and Adjacent State Rules

Since these rules relate to a unique requirement in the Oregon law, ORS 459A.070, there are no federal requirements in this area. These rules are therefore more stringent than federal requirements. None of the adjacent states have a similar provision in their state laws or administrative rules.

Authority to Address the Issue

These rules are adopted pursuant to the authority of Oregon Revised Statutes (ORS) 459A.025 and 459.045 and 468.020. The rules relate to the requirements of ORS 459A.070.

Process for Development of the Rulemaking Proposal

In January 1993, the Department solicited input from local government regarding the sunsetting of OAR 340-90-190. Consensus among affected local governments was that the rule not be allowed to sunset. Local governments asked the Department for action on this as soon as possible, before they review their solid waste collection rates in July 1993. Their position is that the rule allowing a charge for collection of yard debris is needed so that rates can be set to cover the additional costs involved with collecting this material.

Several provisions of OAR 340-90-190 appear to be in conflict. This has led several jurisdictions to misinterpret the rule. Local governments have asked staff to clarify the language so that it can be utilized effectively and consistently. Local government and industry representatives made specific recommendations of clarifying language.

The Department considered several alternative methods to deal with issues related to OAR 340-90-190. In addition to the proposed rule amendments, these alternatives included;

a. Do nothing.

The rule would sunset as scheduled on June 1, 1993. If this were to occur, local government's authority to charge for yard debris recycling service would be challenged. In addition, the section of the rule which requires local governments to provide an equivalent level of yard debris service to multi-family complexes and single family residences would be eliminated. This provision was requested by the City of Portland and was adopted by the Commission in December when General Recycling Rules incorporating the 1991 Recycling Act were adopted.

b. Extend the sunset date to June 1, 1994.

This would allow the rule to remain in effect but, without any language clarification, would continue the confusion regarding local government program implementation.

c. Remove the sunset provision and make major language clarification.

This year (1993), the Metropolitan Service District will evaluate the capacity of yard debris processing facilities in the area. If the facilities are found to be adequate, local

jurisdictions will be required to provide weekly on-route yard debris collection in 1994. If this occurs this rule could have wider application and significance in the coming year and will need to be revised to reflect new conditions.

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

There were three significant elements of the rule taken to public hearing.

First, eliminating the sunset clause, Section (10). All written and oral comments regarding this issue were in support of deletion of this section and continuation of the rule.

Second, clarifying the rule's language with regard to what amount of yard debris collection service is included in the base rate and how much can be charged for services beyond those covered in the base rate.

Third, requiring equivalent yard debris collection service for multi-family dwellings of four or less units and single family residences.

Summary of Significant Public Comment and Changes Proposed in Response

The Department worked closely with local government representatives and other affected persons. There has been a general passive support for the proposed rule amendments. These amendments will allow the present administrative rules to continue in place. A specific effort was made to clarify language in the existing rule without modifying existing policy.

All public comments have been in support of the continuation of the existing rule by removal of the sunset clause. There have been a number of specific suggestions for new wording to clarify the existing rule. Any suggestions which have clarified the existing rule without changing its intent have been incorporated into the proposed amendments. Specific suggestions are discussed in Attachment F.

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

There is no additional work, from the Department, required by the proposed rule changes. The local governments, which are most affected, have been directly involved in the drafting of the proposed amendments. The proposed rule will be implemented by allowing the yard debris collection systems which are presently in place to continue

without challenge. Under the authority of this rule, local governments may continue to set yard debris collection rates which include the following: (1) collection of the first unit of yard debris as part of the basic solid waste and recycling collection service. Charging for this collection must be a part of the basic solid waste and recycling collection fee; (2) local government is allowed to charge an additional fee for additional yard debris collection service. In all cases the fee charged for yard debris collection service must be less than that charged for the same amount of solid waste collection service.

Recommendation for Commission Action

It is recommended that the Commission adopt the rule amendments regarding charge for the collection of yard debris as presented in Attachment A of the Department Staff Report.

Attachments

A. Rule (Amendments) Proposed for Adoption
B. Supporting Procedural Documentation:
    1. Legal Notice of Hearing
    2. Public Notice of Hearing (Chance to Comment)
    3. Rulemaking Statements (Statement of Need)
    4. Fiscal and Economic Impact Statement
    5. Land Use Evaluation Statement
C. Presiding Officer's Report on Public Hearing
D. List of Written Comments Received
E. Department's Evaluation of Public Comment
F. Detailed Changes to Original Rulemaking Proposal made in Response to Public Comment
G. Advisory Committee Membership and Report
H. Rule Implementation Plan

Reference Documents (available upon request)

Reference Documents (available upon request)

Written Comments Received (listed in Attachment D)

Approved:

Section: Patricia Vernon

Division: Stephanie Hallock

Report Prepared By: William R. Bree

Phone: 229-5934

Date Prepared: April 30, 1993

WRB:wrb
U:\EQC\YB12357
May 21, 1993

OAR 340-90-190 NEW YARD DEBRIS CHARGE RULE

(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;

(b) increase recovery of yard debris and stimulate participation in yard debris recycling programs;

~~[(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;]~~

(c) acknowledge the rate considerations due to the extreme variability of volumes generated;

(d) ensure that service provided to multi-family generators residing in dwellings of four or less units is equivalent to service provided single family residences.

(2) The purpose as stated in Section (1) of this rule is to apply to those recycling programs required under ORS 459A.005 and ORS 459A.010 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) As used in this rule, a "unit of yard debris" is the equivalent of a thirty-two gallon can, a similar sized bag, or the standard unit of yard debris service provided, whichever is greater.

~~[(4)]~~ (5) 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 service. The cost of collection of at least the equivalent of one unit of yard debris per month must be incorporated into the base fee charged for solid waste and recycling collection and disposal. An additional fee may be charged for yard debris service which exceeds the equivalent of collection of one unit of yard debris per month. ~~[No fee may be charged for the first setout per month of up to a unit of yard debris. The first unit of yard debris collection is defined as the equivalent of a thirty-two gallon can, or the standard unit of yard debris service provided, whichever is greater.]~~ Where multi-family complexes are treated as a single customers, the local government providing the yard debris service shall assure that yard debris service is provided at a level equivalent to service provided single family dwellings. ~~Equivalent service shall be based on the amount of yard debris generated.~~

Local governments shall make this determination and any related adjustment in service, no later than their next rate review process.

In addition to the base fee charged for solid waste and recycling collection and disposal, which must include the first unit of yard debris, local governments may charge a fee for:

(a) collection of any volumes of yard debris over and above the first unit which is included in the base fee, ~~setout per month of up to a unit of yard debris in a curbside collection service~~ where the generator is a solid waste customer;

(b) collection of any volumes of yard debris where the generator is not a solid waste customer;

(c) yard debris collected through a depot program or other alternative method including on-call service;

~~[(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)] (6)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)] (7)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) This 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.]~~

NOTICE OF PROPOSED RULEMAKING HEARING

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

AGENCY: Department of Environmental Quality, Hazardous and Solid Waste Division

The above named agency gives notice of hearing.

HEARING TO BE HELD:

DATE: **TIME:** **LOCATION:**

Monday April 26, 1993, 8 a.m.-1 p.m., DEQ Headquarters, 811 SW 6th, Portland

Hearings Officer: William R. Bree

Pursuant to the Statutory Authority of ORS 459.045, 459A.025 the following action is proposed:

ADOPT:

AMEND: OAR 340-90-190, Charge for Yard Debris Collection

REPEAL:

☐ Prior Notice Given; Hearing Requested by Interested persons ☒ No Prior Notice Given

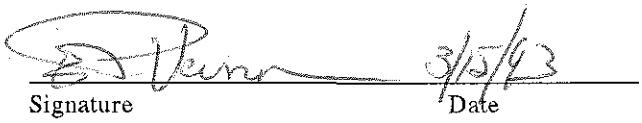
SUMMARY:

The proposed amendment eliminates the sunset clause in the rule language relating to charging a fee for yard debris collection. It also clarifies the rule language. Local governments have requested that the rule be made permanent and that the language be rewritten for clarity.

Interested persons may comment on the proposed rules orally or in writing at the hearing. Written comments received by 4 p.m. Friday, April 30, 1933 will also be considered. Written comments should be sent to and copies of the proposed rulemaking may be obtained from:

AGENCY: Department of Environmental Quality
ADDRESS:
811 S. W. 6th Avenue
Portland, Oregon 97204

ATTN: Alene Cordas
PHONE: 229-6046 or Toll Free 1-800-452-4011



Signature Date

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

Amendment to Charge for Yard Debris Collection Rule
OAR-340-90-190

Date Issued:	April 1, 1993
Public Hearings:	April 26, 1993
Comments Due:	April 30, 1993

WHO IS AFFECTED: Local governments, residential recyclers.

WHAT IS PROPOSED: To amend OAR 340-90-190, Charge for Yard Debris Collection Rule.

WHAT ARE THE HIGHLIGHTS: The amendment eliminates the sunset provision and substitutes clearer language for the current rule. This is not a policy change, but a clarification to an existing rule.

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

Room 3A, DEQ Headquarters, 811 SW 6th, Portland
Monday April 26, 1933
8 a.m.- 1 p.m.

Written comments must be received by 4:00 p.m. on Friday, April 30, 1993 at the following address:

Department of Environmental Quality
Solid Waste Reduction and Planning Section
Hazardous and Solid Waste Division
811 S. W. 6th Avenue

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.

Portland, Oregon, 97204

A copy of the Proposed Rule may be reviewed at the above address. A copy may be obtained from the Department by calling the HSW Division at 229-5913 or calling Oregon toll free 1-800-452-4011.

WHAT IS THE NEXT STEP:

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

Environmental Quality Commission

State of Oregon
Department of Environmental Quality Memorandum†

Date: April 1, 1993

To: Interested and Affected Public

Subject: Rulemaking Proposal -
Amend Charge for Yard Debris Collection Rule, OAR 340-90-190

This memorandum contains information on a proposal by the Department of Environmental Quality (DEQ) to adopt rule amendments regarding the charge for residential yard debris collection.

Local governments have requested that the current rule be made permanent to assist implementation of local programs and that the language be rewritten for clarity.The proposed amendment would eliminate a clause sunsetting this rule on June 1, 1993. It also would clarify the language relating to charging a fee for yard debris collection.

What's in this Package?

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

Attachment A	The actual language of the proposed rule (amendments).
Attachment B	The "Legal Notice" and the general "Public Notice" of the Rulemaking Hearing. (required by ORS 183.335)
Attachment C	The official Rulemaking Statements for the proposed rulemaking action. (required by ORS 183.335)
Attachment D	The official statement describing the fiscal and economic impact of the proposed rule. (required by ORS 183.335)
Attachment E	A statement providing assurance that the proposed rules are consistent with statewide land use goals and compatible with local land use plans.
Attachment F	(Other attachments as appropriate and necessary)

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

Hearing Process Details

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

Date: Monday April 26, 1933
Time: 8 a.m.-1 p.m.
Place: Room 3A, DEQ Headquarters, 811 SW 6th, Portland

Deadline for submittal of Written Comments: 4 p.m. April 30, 1993. Written testimony may be submitted to Alene Cordas, DEQ, 811 SW 6th, 8th floor, Portland, OR 97204.

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

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

What Happens After the Public Comment Period Closes

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

The EQC will consider the Department's recommendation for rule adoption during one of their regularly scheduled public meetings. The targeted meeting date for consideration of this rulemaking proposal is June 10, 1993. This date may be delayed if needed to provide additional time for evaluation and response to testimony received in the hearing process. You will be notified of the time and place for final EQC action if you present oral testimony at the hearing or submit written comment during the comment period or ask to be notified of the proposed final action on this rulemaking proposal.

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

Background on Development of the Rulemaking Proposal

What is the problem

Unlike other recyclables, yard debris is unique in that it is seasonal and volume-based. Acknowledging this, the original rule was written to allow a volume-based fee system to cover the costs of yard debris collection. The rule contained a June 1, 1993 sunset date, "...at which time the Department (is to) review the rules and make any recommendations for deletion, changes, or continuation...to the (Environmental Quality) Commission."

To encourage yard debris recycling collection and to cover the additional costs incurred in collecting this material, the position of local governments is that the rule allowing a charge for collection of units of yard debris should be made permanent. This year, the Metropolitan Service District will evaluate the capacity of yard debris processing facilities in the area. If they are found to be adequate, local jurisdictions will be required to provide weekly on-route yard debris collection in 1994. Thus this rule could have wider application and significance in the coming year.

In addition, were the rule to sunset, the provision requiring local governments to provide a level of yard debris collection service to multi-family complexes (which are treated as a single customer) equivalent to the level provided single-family dwellings would be eliminated. This provision was inserted at the request of the City of Portland and passed by the Commission in December at the time of adoption of General Recycling Rules incorporating the 1991 Recycling Act.

Finally, the rule language as written is confusing, with several provisions seemingly contradictory. Local governments have asked the Department to clarify the language.

How does this proposed rule help solve the problem

The proposed amendment would eliminate the sunset provision and clarify the existing language. The proposal does not set new policy but rather clarifies that already in existence.

How was the rule developed

The Department initially held telephone conversations with affected jurisdictions and with one hauler. Next, a meeting to solicit direciton was held with four local government representatives and Oregon Sanitary Services Institute. After this, a draft rule was written and will be routed among attendees at that meeting. The Solid Waste Advisory Committee also also will be asked for input on the draft rule rewrite. After this, the draft rule will go to public hearing and is anticipated to go before the Commission at its June 10 meeting. Based on public input, staff may take it before the Solid Waste Advisory Committee a second time before it goes to the Commission.

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

This amendment does not affect the public, and will allow local jurisdictions to continue to utilize it effectively and consistently when setting up local yard debris collection programs.

How will the rule be implemented

See above.

Are there time constraints

N/A

Contact for more information

If you would like more information on this rulemaking proposal, or would like to be added to the mailing list, please contact: Alene Cordas, Solid Waste Reduction and Planning Section, DEQ, 811 SW 6th, Portland OR 97204; or telephone 229-6046, or toll-free in Oregon 1-800-452-4011.

X Rule Adoption Item
☐ Action Item
☐ Information Item

Agenda Item *#*
June 10, 1993 Meeting

Title:

Amendment to Charge for Yard Debris Collection Rule,
OAR 340-90-190

Summary:

This amendment eliminates a sunset provision and clarifies language.

Department Recommendation:

Adopt the rule amendment regarding charging for yard debris collection, as presented in Attachement A of this staff report.

Report Author	Division Administrator	Director

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

AC/EQC5
March 12, 1993

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Amendment to OAR 340-90-190, Charge for Yard Debris Collection Rule

Rulemaking Statements

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

1. Legal Authority

ORS 459.045, 459A.025

2. Need for the Rule

Local governments have requested that the Department eliminate the sunset provision and rewrite the law for clarity (vs. policy change). The amendment would make the rule permanent by deleting the sunset clause. In addition, the existing language is confusing. The amendment would clarify the language.

Principal Documents Relied Upon in this Rulemaking

ORS 459.045, 459A.025
OAR 340-90-190

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Amendment to OAR 340-190-90, Charge for Yard Debris Collection Rule

Fiscal and Economic Impact Statement

Introduction

The Department is proposing to amend the rule which allows local jurisdictions to charge for yard debris collection. The amendment would not change the existing rule other than to eliminate a sunset provision and clarify the language. Local governments have requested that the Department make this rule permanent and clarify the language.

General Public

The general public would incur no additional costs as a result of the proposed rule amendment. Under the current rule, generators who put out yard debris for recycling collection can be charged for additional units after the first unit. The rewritten rule does not change this provision.

Small Business

N/A: the rule applies only to residential yard debris collection and so is not applicable to small business.

Large Business

N/A

Local Governments

Local governments would incur no additional costs as a result of the proposed amendment.

State Agencies

N/A

- DEQ
  - FTE's
  - Revenues
  - Expenses

- Other Agencies

N/A

Assumptions

Bruce Dougall

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Amendment to OAR 340-90-190, Charge for Yard Debris Collection rule

Land Use Evaluation Statement

1. **Explain the purpose of the proposed rules.**
   The proposed amendment to this rule would clarify the existing language and eliminate a sunsetting provision.

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

   a. **If yes, identify existing program/rule/activity:**
      Not applicable.

   b. **If yes, do the existing statewide goal compliance and local plan compatibility procedures adequately cover the proposed rules?**
      Yes____ No__X___ (if no, explain):
      Not applicable.

   c. **If no, apply the following criteria to the proposed rules.**
      In the space below, state if the proposed rules are considered programs affecting land use. State the criteria and reasons for the determination.
      This amendment clarifies and makes permanent an existing rule. Thus it will not result in new land-use effects.

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

Stephanie Hallock — Division
Richard Young — Intergovernmental Coord.
3/12/93 — Date

State of Oregon

ATTACHMENT C

State of Oregon
Department of Environmental Quality Memorandum

Date: April 26, 1993

To: Environmental Quality Commission

From: Linda Hayes

Subject: Presiding Officer's Report for Rulemaking Hearing
Hearing Date and Time: April 26,1993 beginning at 8:00 a.m.
Hearing Location: Room 3A, 811 S.W. Sixth Avenue

Title of Proposal: Amendments to OAR 340-90-190, Charge for Yard Debris Recycling Rule.

The rulemaking hearing on the above titled proposal was convened at 8:00 a.m. People were asked to sign witness registration forms if they wished to present testimony. People were also advised that the hearing was being recorded and of the procedures to be followed.

Two people were in attendance, no one signed up to give testimony.

William R. Bree briefly explained the specific rulemaking proposal, the reason for the proposal, and responded to questions from the audience.

The following person handed in written comments but did not present oral testimony:

Estle Harlan, Tri County Council

There was no further testimony and the hearing was closed at 9:00 a.m.

Attachments:

Written Testimony Submitted for the Record.

CHARGE FOR YARD DEBRIS COLLECTION RULE, OAR 340-90-90
INDEX TO WRITTEN COMMENTS

A summary of all comments received on the proposed rule amendments is contained in ATTACHMENT C. The following people submitted written comments on the proposed rules.

1. Kathy Kiwala, Recycling Coordinator, City of Lake Oswego, P.O. Box 369, Lake Oswego, Oregon 97034

2. Estle Harlan, Tri-County Council, 2202 S. E. Lake Road, Milwaukie, Oregon 97222

3. Lee Barrett, Bureau of Environmental services, 1200 S. W. Fifth Avenue, Portland, Oregon 97204-1972

4. Lynne Storz, Dept of Health and Human Services, Washington Co., 155 North First Avenue, Hillsboro, Oregon 97124

5. Max Brittingham, Oregon Sanitary Service Institute, 1880 Lancaster Drive, Suite 120, Salem, Oregon 97305

ATTACHMENT E

CHARGE FOR YARD DEBRIS COLLECTION RULE
OAR 340-90-190
AMENDMENTS PROPOSED FOR ADOPTION
JUNE, 1993

SUMMARY OF COMMENTS AND RESPONSE TO COMMENTS

A public hearing was held on the proposed rule amendments on April 26, 1993. A total of two people attended the hearing. The Department received written testimony on the rule from three people. Department staff worked directly with an informal yard debris charge issue advisory group made up of representatives from local government and the solid waste collection industry throughout the public comment process. Below is a summary of the comments received.

A. REMOVAL OF THE SUNSET PROVISION

All three persons providing written testimony supported the amendment which deleted the sunset clause from the rule. It was also a consensus of the members of the Department's working yard debris charge issue advisory group that this section be removed.

B. CLARIFICATION OF EXISTING LANGUAGE.

Individual members of the Department's yard debris charge advisory group each had specific suggestions for small changes in the rule language which would help clarify the original intent without creating new policy. Most of these comments were provided orally in group meetings or in individual discussions with staff. Some were formalized in written comments to the public hearing. In each case, the comments were considered and most of the suggested changes were incorporated into the proposed amendments to the rule. Because of the time restriction presented by the existing sunset clause the process did not provide an adequate opportunity for discussion of substantial amendments. Any suggestions which were considered to be significant and might result in a change in policy or interpretation of the existing rule were set aside for a future date when time will allow a full, formal consideration.

ATTACHMENT F

CHARGE FOR YARD DEBRIS COLLECTION RULE
OAR 340-90-190
AMENDMENTS PROPOSED FOR ADOPTION

DETAILED CHANGES TO THE ORIGINAL RULEMAKING PROPOSAL

The only changes to the final, proposed rule, which resulted from the public hearing process, were additional changes in language to clarify the original intent of the rule. These changes were made at the direct request of local government representatives and other affected persons. These specific changes are listed below.

1) Subsection (1)(a) of the original rule was proposed to be deleted, but after public comment, it was determined that this statement helped to clarify the intent of the rule and, therefore, it is now being retained.

> "(1)(a) ensure that a financial disincentive for recycling is not created for any waste generator;"

2) In Subsection (1)(d) of the final, proposed rule, the phrase "and based on the amount of yard debris generated" does not appear because it has been deleted from the proposed new language. After public comment, it was felt that this phrase conflicted with the term "equivalent" earlier in the text and might allow for two different policy interpretations of the full statement.

> "(1)(d) ensure service provided to multi-family generators residing in dwellings of four or less units is equivalent to service provided single family residences ~~and based on the amount of yard debris generated~~."

3) In Section (4) of the final, proposed rule, the phrase "a similar sized bag," has been added. One local government has a yard debris collection system which utilized 30 gallon kraft paper bags. They were concerned that a 30 gallon bag was not equivalent to a 32 gallon can. This new language address their concern.

> "(4) As used in this rule a "unit of yard debris" is the equivalent of a thirty-two gallon can, <u>a similar sized bag,</u> or the standard unit of yard debris service provided, whichever is greater."

4) In Section (5) of the final, proposed rule, language has been added to clarify the intended policy that the first unit of yard debris collection service should be charged in a base rate and additional units of service may be charged with an additional fee. After public comment, new

language was added to more clearly state the intended policy.

> "(5)... may be charged a fee for yard debris recycling service. The cost of collection of at least the equivalent of one unit of yard debris per month must be incorporated into the base fee charged for solid waste and recycling collection and disposal. An additional fee may be charged for yard debris service which exceeds the equivalent of collection of one unit of yard debris per month."

5) In Section (5) of the final, proposed rule, the final sentence of paragraph one from the original rule does not appear. This sentence, relating to equivalent service, appeared to be in conflict with the previous one and was causing different local governments to make different interpretations of the intent of the rule. This sentence was removed at the direct request of local governments. The policy issue of how to charge for yard debris collection service to multi-family residences has not been completely resolved and may need to be revisited. However, the existing language was causing more confusion than clarity. This sentence was removed at the request of local government.

> "(5) Where multi-family complexes are treated as a single customer, the local government providing the yard debris service shall assure that yard debris service is provided at a level equivalent to service provided single family dwellings. ~~Equivalent service shall be based on the amount of yard debris generated.~~"

6) In Section (5), paragraph 3 and Subsection (5)(a) of the final proposed rule, language has been added to clarify the intended policy that the cost of first unit of yard debris collected should be charged in the collection service base fee. This language was requested by the solid waste collection industry.

> "(5) ... In addition to the base fee charged for solid waste and recycling collection and disposal, which must include the first unit of yard debris, local governments may charge a fee for:
>
> (a) collection of any volumes of yard debris over and above the first unit which is included in the base fee, ~~set out per month of up to a unit of yard debris in a curbside collection service~~ where the generator is a solid waste customer;"

ATTACHMENT G

CHARGE FOR YARD DEBRIS COLLECTION RULE
OAR 340-90-190
AMENDMENTS PROPOSED FOR ADOPTION

ADVISORY COMMITTEE MEMBERSHIP AND REPORT

Due to the time constraint involved with the sunset provision in the original rule, Department staff did not have an opportunity to use a formal advisory committee process in drafting and review of these proposed rule amendments. Staff did provide the Department's Solid Waste Advisory Committee with an opportunity to review and comment on the proposed rule amendments at the same time they were presented to the public.

During the development and review of the proposed rule amendments, the Department staff worked very closely with an informal advisory group representing local government, solid waste collection industry, and affected public. Members of this group met several times with staff to provide comments on drafts of the amendments and on proposed final amendments. This advisory group was representative of the parties affected by this rule. It was in their best interest to have a final rule which is easy to understand and implement. The various language changes in the proposed rules are based directly on the suggestions from these advisors.

Advisory group members included:

Lissa West, City of Portland
Megan Steele, City of Portland
Estle Harlan, Tri County Council
Jeanne Roy, Recycling Advocate
Sue Ziolko, Clackamas County
Delyn Kies, Washington County.
Lynn Storz, Washington County
Linda Kotta, City of Gresham

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Amendment to Charge for Yard Debris Collection Rule, OAR 340-90-190

Rule Implementation Plan

Summary of the Proposed Rule

The proposed amendment will eliminate a sunset provision and clarify existing language in the existing rule.

Proposed Effective Date of the Rule

June 10, 1993

Proposal for Notification of Affected Persons

A combination of a general news release, and announcements in Department publications and other agency and association publications as appropriate.

Proposed Implementing Actions

This amendment clarifies an existing rule so no further implementation will be necessary.

Proposed Training/Assistance Actions

The Department's Technical Assistance team works with local jurisdictions to implement provisions of the 1991 Recycling Act. It is anticipated that several jurisdictions will select yard debris programs as their menu item choices. In that case, the Department will provide guidance as needed.

Environmental Quality Commission

☒ Rule Adoption Item
☐ Action Item
☐ Information Item

Agenda Item E
June 10, 1993 Meeting

Title:

Proposed Repeal of Language in OAR 340-45-080, "Effect of a Permit," and Replacement with New Language.

Summary:

The Commission adopted the current rule in July 1992. This rule was intended to provide what is commonly known as "Permit as a Shield" protection to domestic and industry permit holders.

The Department proposes to repeal the rule language in OAR 340-45-080 because of issues raised in a petition to the Court of Appeals for a review of the rule. The Department also proposes to reword the language to clarify meaning and intent of the rule.

The Clean Water Act provides that compliance with the terms of a National Pollutant Discharge Elimination System (NPDES) permit constitutes compliance, for purposes of enforcement, with specified effluent limits. Certain pollutants such as toxic discharges are specifically excluded from protection.

The proposed rule includes the provisions of the federal shield but also includes the following more stringent provisions: 1) groundwater quality protection requirements are excluded from the shield; 2) new rules adopted by the Commission pursuant to declaration of an emergency can be made applicable to existing permits without permit modification; and 3) violations of water quality standards by pollutants not specifically limited in the permit are not shielded from enforcement.

Department Recommendation:

Repeal the language in OAR 340-45-080, "Effect of a Permit" and replace it with new language presented in Attachment A of the staff report.

Report Author	Division Administrator	Director
Thomas J. Lucas	Michael Downs	Fred Hansen

May 19, 1993

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

State of Oregon
Department of Environmental Quality Memorandum†

Date: May 25, 1993

To: Environmental Quality Commission

From: Fred Hansen, Director

Subject: Agenda Item E, June 10, 1993, EQC Meeting

Proposed Repeal of Language in OAR 340-45-080, "Effect of a Permit," and Replacement with New Language.

Background

On January 19, 1993, the Director authorized the Water Quality Division to proceed to a rulemaking hearing on a proposed rule which would repeal the rule in OAR 340-45-080 "Effect of a Permit" and replace it with new language. The existing rule, adopted by the Commission in July 1992, was intended to provide "Permit as a Shield" protection to municipal and industry permit holders. The Department is proposing the repeal of the existing rule and replacement with a new rule because of recent legal action and to clarify the language and intent of the rule.

"Permit as a Shield" protection means that if a permittee is in compliance with the terms and conditions of their permit, they would be considered to be in compliance with specific statutes and rules that the permit is intended to implement. This would provide a shield from enforcement action or citizen suit for alleged violations of those specific statutes and rules, providing the permit holder was operating in compliance with the permit. Permit violations would continue to be subject to enforcement actions and third party lawsuits.

Pursuant to the authorization, hearing notice was published in the Secretary of State's Bulletin on March 1, 1993. Notice was mailed to the mailing list of those persons who have asked to be notified of rulemaking actions, and to a mailing list of persons known by the Department to be potentially affected by or interested in the proposed rulemaking action on March 18, 1993.

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

MW\WC11\WC11441.5

A Public Hearing was held on April 19, 1993, at 9:00 a.m., in Conference Room 3A, at the Department offices, with Barbara Burton serving as Presiding Officer. The Presiding Officer's Report (Attachment C) summarizes the oral testimony presented at the hearing. Written comment was received through 5:00 p.m., April 28, 1993, and is summarized in the Presiding Officer's report. A list of written comments received is included as Attachment D. A copy of the comments is available upon request.

Department staff evaluated the comments received (Attachment E). Based upon that evaluation, a modification to the initial rulemaking proposal is being recommended by the Department. The modification is summarized below and detailed in Attachment F.

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

Issue this Proposed Rulemaking Action is Intended to Address

The rulemaking is necessary to respond to two related issues: 1) a petition by the Northwest Environmental Defense Center (NEDC) filed with the Court of Appeals for a review of the rule adopted in July 1992, and 2) a need to clarify the intent of the rule.

Petition for Rule Review. In the fall of 1992, NEDC petitioned the Court of Appeals for a review of the rule, citing both procedural and substantive reasons. In preparing the record of the adoption process for submittal to the Court of Appeals, the Department concluded that the rulemaking notice may not have been adequate, and that it would be prudent to repeal the adoption process rather than proceed through the appellate process.

Clarification of Intent. Since adoption of the new rule in July 1992, the Water Quality Division has been working with several municipalities in the permit renewal process. Through negotiations and discussions on permit conditions it has become apparent that many municipalities do not clearly understand the provisions of the rule. Furthermore, some of the language in the current rule appears unclear as to how it would apply to specific permit conditions.

Because of the issues raised in NEDC's petition for review and because of uncertainties in applicability of the rule, the Court was notified of the Department's intent to repeal the existing rule and simultaneously proceed with a new rule adoption proceeding to address the concerns intended to be addressed in the original rule. The Department also proposes to reword the rule to further clarify its intent and meaning.

Relationship to Federal and Adjacent State Rules

The proposed rule is similar to the "Permit as a Shield" provisions in the Clean Water Act and its implementing rules. Section 402(k) of the Clean Water Act and rules promulgated by the Environmental Protection Agency (40 CFR 122.5) provide that compliance with the terms of a National Pollutant Discharge Elimination System (NPDES) permit constitutes compliance, for purposes of enforcement, with specified effluent limit related provisions of the Clean Water Act (and related rules). Certain pollutants such as toxic discharges are specifically excluded from protection.

The proposed rule includes the provisions of the federal shield but is more stringent, as follows:

1) Groundwater quality protection requirements in OAR Division 40 are specifically excluded from protection. The federal language does not mention ground water quality protection.

2) New rules adopted by the Commission pursuant to declaration of an emergency can be made applicable to existing permits without permit modification. At the Commission's discretion, the new rules can be exempted from shield protection. The federal language does not include this provision.

3) Water quality standards violations by pollutant discharges not specifically limited in the permit are not afforded protection. That is, the violations are subject to enforcement actions and third party lawsuits. For example, if a permit did not include an effluent limit for temperature but a violation of water quality standards was documented for temperature, and could be shown to be the result of the permittee's discharge, then the permittee would be subject to enforcement action. The federal language does not explicitly include this provision.

All NPDES permits written directly by the Environmental Protection Agency receive "Permit as a Shield" protection. This includes all NPDES permits written in Idaho, Alaska and several other states as well. The State of Washington also provides permit holders "Permit as a Shield" protection.

Authority to Address the Issue

ORS 468.020 authorizes the Commission to "adopt such rules and standards as it considers necessary and proper in performing the functions vested by law in the Commission."

ORS 468B.035 authorizes the Commission to implement provisions of the federal Clean Water Act.

Section 402(k) of the federal Clean Water Act and 40 CFR 122.5 of the Environmental Protection Agency's implementing rules include the "Permit as a Shield" language.

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

After the petition for rule review by NEDC, Department staff reviewed the rule adoption process and concluded that the rulemaking process may not have been adequate. A decision was made to initiate a new rulemaking process and resubmit the rule to the Commission. In addition, staff reviewed the rule for clarity and meaning and concluded that the language appeared unclear. After the review, a meeting was held with

Department's legal counsel in the Justice Department and a new rule was drafted in consultation with the Justice Department. Department staff then met with representatives from several municipalities to review the proposed rule. Based on this meeting, additional changes were made in the proposed rule.

The Department then prepared a rulemaking package and scheduled a public hearing.

The Department considered other alternatives to the proposed rule including a "no action alternative," and simply resubmitting the existing rule. These alternatives were rejected because of a possible procedural error in the rule adoption process, and because several permit holders were having difficulty understanding the rule language, and there were apparent differences in rule interpretation.

The Department did not form an advisory committee to assist in rule review, and informal public meetings were not held. As noted above, a meeting was held with representatives from several communities to review language in the proposed rule.

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

The rule proposed for public hearing continued to provide "Permit as a Shield" protection for permit holders, thereby addressing the earlier concern that such protection be afforded. The proposed rule attempted to address the issues relating to clarity and interpretation of rule language which was expressed after the rule was adopted. Substantial effort was made to improve readability and to clarify rule intent. In particular, the proposed rule language attempted to clarify the extent to which compliance with the terms of a permit will be deemed compliance with requirements of statues and rules. The reader should refer to Attachment A for the full text of the proposed rule. The reader should also refer to Attachment G, Rulemaking Proposal, which was mailed to Interested and Affected public. Pages 6-12 explain the essential features of the rule and provide several examples of how the rule may be applied in certain situations.

The essential features of the proposed rule are presented as follows:

1. The proposed rule references Sections 301, 302, 306, 307, 318, 403 and 405 (a) and (b) of the Clean Water Act and Sections .030, .035, and .048 of ORS Chapter 468B. The Clean Water Act sections refer to regulatory requirements that are to be addressed in permits by effluent limitations. The State Statutory sections refer to effluent limitations, implementation of federal requirements, and water quality standards.

2. The proposed rule language considers permit holders to be in compliance with the regulatory requirements of the above sections as long as they meet the related effluent limitations contained in their permit.

3. Toxic effluent provisions contained in Section 307 of the CWA and OAR Division 41, State-Wide Water Quality Management Plan, are specifically excluded from any enforcement shield the rule may afford. This means that violation of a standard or requirement relating to a toxic pollutant may be subject to enforcement or citizen suit, even though the permittee may be in compliance with a permit limitation related to that standard or requirement. Federal law prohibits extension of the enforcement shield provisions to requirements related to federally adopted toxics standards.

4. The proposed rule language excludes from shield protection any water quality standards violations, in effect at the time of permit issuance, which are caused by pollutants other then those addressed by specific effluent limitations in the permit.

5. The proposed language excludes standards for sewage sludge and disposal adopted under Section 405(d) of the CWA from the enforcement shield, but if permittees are in compliance with permit conditions which implement standards for sewage sludge use or disposal, then this (the compliance with the permit) becomes an affirmative defense in any enforcement action brought for violation of the standard. This means that if a permittee can prove compliance with permit conditions relating to a sludge management plan then the permittee is in compliance with the Clean Water Act. This exclusion is consistent with the Federal shield rule provisions.

6. The proposed language only refers to National Pollutant Discharge Elimination System (NPDES) permits. Water Pollution Control Facility (WPCF) permits are issued pursuant to state law for waste treatment and disposal that does not involve effluent limits for discharge to navigable waters. WPCF permits are not proposed for inclusion under this rule.

7. Ground Water Quality Protection requirements contained in OAR 340, Division 40, Ground Water Quality Protection, are specifically excluded from enforcement shield provisions of this rule.

8. New rules adopted by the EQC, pursuant to a declaration of an emergency by either the Governor or the EQC, may be applicable to existing permits.

Summary of Significant Public Comment and Changes Proposed in Response

There were seven respondents that presented oral or written testimony: two respondents supported the proposed rule as written; three respondents supported the proposed rule with reservations; and two respondents opposed the rule. The most significant issues are presented below along with the Department's responses.

1. One respondent requested that the language relating to adoption of new rules pursuant to declaration of emergency be moved from section 1c of the proposed rule, and made a freestanding section. Possible conflicts between the emergency rule and the permits were cited as a reason. The Department believes that such conflicts are unlikely but possible. Section 1c was moved to a new section of the proposed rule and reworded slightly. The intent of Section 1c was not changed (see Attachment A).

2. Testimony was submitted which stated that the proposed rule violates sections of the Clean Water Act and State statutes. This testimony stated that the Clean Water Act prohibits permit holders from discharging any amount of a pollutant which is not specifically authorized in the permit, and the proposed rule could be construed to exempt them from this requirement. The Department disagrees with this testimony. The Department noted, however, that there is pending litigation, and if the litigation does not sustain the Department's interpretation, the Commission's rules and the Department's permitting practices can be amended as necessary.

3. Testimony was submitted which stated that section 4 of the proposed rule should be eliminated and that language in the rule should be more similar to the language in section 402(k) of the Clean Water Act. That is, if there are violations of water quality standards from pollutant sources not subject to effluent limitations, the Department should be required to modify permits to include enforceable effluent limits. Department staff do not believe that elimination of section 4 would be an environmentally sound course of action. The ability to take enforcement action is essential to ensure rapid and meaningful responses to discharges that cause violations of water quality standards. Without the ability to take enforcement action, a combination of slow responses, difficult negotiations and permit appeals could delay a permit modification for several years. In the meantime serious water quality standards violations would continue.

4. There were several other general objections to the concept of a "Permit as a Shield" including: a) the proposed rule is unnecessary for clarification of permittee responsibilities: b) the proposed rule places an enormous burden on Department staff; c) the proposed rule is unsound environmental and public health policy, d) the proposed rule is contrary to state and federal antidegradation standards and federal antibacksliding policies, e) the proposed rule is contrary to the DEQ/EPA strategic plan, f) the proposed rule is contrary to statutes relating to the "need" for the rule, and requirements that the rule comply with statewide planning goals. The Department does not agree with this testimony.

Attachment C summarizes all oral and written testimony. Attachment E is a response to this testimony and covers issues in addition to the those described above.

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

The proposed rule will be implemented on filing with the Secretary of State. It will apply to all existing NPDES permits and to new permits as they are issued. The impact on the Department will be associated with a slight increase in staff time spent writing and reviewing permit documents before issuance, to assure completeness. There will be no need to increase staff or to provide additional training. Copies of the new rule will be made available to permit holders on request.

Recommendation for Commission Action

It is recommended that the Commission repeal the language in OAR 340-45-080, "Effect of a Permit" and replace it with new language presented in Attachment A of the Department Staff Report. The new language will provide what is commonly known as "Permit as a Shield" protection to domestic and industry NPDES permit holders.

Attachments

A. Rule (Amendments) Proposed for Adoption
B. Supporting Procedural Documentation:
    1. Legal Notice of Hearing
    2. Public Notice of Hearing (Chance to Comment)
    3. Rulemaking Statements (Statement of Need)
    4. Fiscal and Economic Impact Statement
    5. Land Use Evaluation Statement
C. Presiding Officer's Report on Public Hearing
D. List of Written Comments Received
E. Department's Evaluation of Public Comment
F. Detailed Changes to Original Rulemaking Proposal made in Response to Public Comment
G. Rulemaking Proposal mailed to Interested and Affected Public

Reference Documents (available upon request)

Written Comments Received (listed in Attachment D)

Approved:

Section: Barbara A. Burton

Division: Michael Downs

Report Prepared By: Thomas J. Lucas

Phone: 229-5065

Date Prepared: May 12, 1993

TJL:crw
May 12,1993

MW\WC11\WC11441.5

NOTE:

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

The ~~[bracketed]~~ portions of text represent proposed deletions made to the rule.

The portions of the text which are ***underlined*** and ~~***[bracketed]***~~ in ***bold italics*** are additions and deletions to the draft rules made in response to public comment.

EFFECT OF A PERMIT

PURPOSE

340-45-080

~~[(1) Except for any toxic effluent standards and prohibitions imposed under Section 307 of the federal Clean Water Act (CWA), standards for sewage sludge use or disposal under 405(d) of the CWA, compliance with a permit during its term constitutes compliance, for purposes of enforcement, with Sections 301, 302, 306, 307, 318, 403, and 405 (a) (b) of the CWA and ORS Chapter 468B, Sections 30, 35, and 48, and implementing regulations, relating to effluent limitations, water quality standards and treatment system operation requirements. However, a permit may be modified, revoked and terminated during its term for cause as set forth in OAR Chapter 340, Division 45 including but not limited to such modifications as may be necessary to implement and enforce Oregon Statues or regulations enacted subsequent to issuance of the permit.~~

~~(2) Compliance with permit conditions which implement a particular standard for sewage sludge use or disposal shall be an affirmative defense in any enforcement action brought for a violation of that standard for sewage sludge use or disposal pursuant to Section 405(e) and 309 of the CWA.]~~

(1) A permittee in compliance with a National Pollutant Discharge Elimination System (NPDES) permit during its term is considered to be in compliance, for purposes of enforcement, with Sections 301, 302, 306, 307, 318, 403, and 405(a) - (b) of the federal Clean Water Act (CWA) and ORS 468B.030, 468B.035, and 468B.048, and implementing rules, applicable to effluent limitations, including effluent limitations based upon water quality basin standards, and treatment systems operation requirements. This section does not apply to:

(a) Toxic effluent standards and prohibitions imposed under Section 307 of the CWA, and OAR Chapter 340, Division 41;

(b) Standards for sewage sludge use or disposal under Section 405(d) of the CWA; ***or***

~~***(c) Rules which the Commission specifies shall be applicable to existing permits because of an emergency declared by either the Commission or the Governor; or***~~

[(d)] (c) Groundwater quality protection requirements as specified in OAR Chapter 340, Division 40.

(2) Section (1) of this rule shall not prevent the Department from instituting any proceeding for any modifications, revocation, or suspension of a permit

during its term — including any modification of a permit necessary to implement and enforce Oregon statutes or rules enacted or adopted subsequent to issuance of the permit.

(3) Compliance with permit conditions which implement a particular standard for sewage sludge use or disposal shall be an affirmative defense in any enforcement action brought for a violation of that standard for sewage sludge use or disposal pursuant to Sections 405(e) and 309 of the CWA.

(4) Nothing in this rule shall prevent the Department from instituting any proceeding against a permittee for violation of ambient water quality standards, outside of any applicable mixing zone, in effect at the time of permit issuance that are not implemented through an effluent limitation.

(5) The Commission may adopt rules which are applicable to existing permits when an emergency is declared by either the Commission or the Governor.

ATTACHMENT B

SUPPORTING PROCEDURAL DOCUMENTATION

1. Legal Notice of Hearing.
2. Public Notice of Hearing (Chance to Comment).
3. Rulemaking Statements (Statement of Need).
4. Fiscal and Economic Impact Statement.
5. Land Use Evaluation Statement.

ADDRESS: Department of Environmental Quality, Air Quality Division, 811 S.W. 6th Avenue, Portland, Oregon 97204
TELEPHONE: 229-5353 or 1-(800) 452-4011

* * * *

DATE:	TIME:	LOCATION:
4-19-93	9 AM	Department of Environmental Quality Conference Room 3A 811 S.W. Sixth Avenue Portland, OR

***This hearing was initially scheduled to be held March 8, 1993. The hearing notice was published in the February 1993 Secretary of State's Bulletin. The hearing was cancelled by the Department of Environmental Quality and rescheduled. This notice reflects the new dates for the hearing.**
HEARINGS OFFICER: Barbara A. Burton
STATUTORY AUTH: ORS 468.020
AMEND: OAR 340-45-080
SUMMARY: OAR 340-45-080, "Effect of a Permit", incorporates language from federal law which allows compliance with the conditions of a National Pollutant Discharge Elimination System (NPDES) permit to constitute compliance with key provisions of the Clean Water Act and Oregon water quality rules and statutes. The rule was adopted so the regulated community can have certainty that if they are in compliance with their permit they cannot be sued for a violation of a new rule that has not yet been embodied in their permit or a requirement the Department chose not to include in their permit.

This amendment includes more descriptive language and is intended to be more clear as to intent. The proposed amendment also explicitly allows the Department to take enforcement action against a permittee for violations of water quality standards by a permittee that are not implemented through an effluent limitation but are prohibited in permit conditions without specific numerical effluent limitations.
LAST DATE FOR COMMENT: 4-28-93 - 5 PM
CONTACT PERSON: Tom Lucas
ADDRESS: Department of Environmental Quality, Water Quality Division, 811 S.W. 6th Avenue, Portland, OR 97204
TELEPHONE: 229-5065 or Toll Free 1-800-452-4011

* * * *

Fish and Wildlife, Department of
Chapter 635

DATE:	TIME:	LOCATION:
3-17-93	TBA	Department of Fish and Wildlife 2501 S.W. First Avenue Portland, OR 97201

Exact time and location will be available 10 days prior to the meeting.
HEARINGS OFFICER: Oregon Fish and Wildlife Commission
STATUTORY AUTH: ORS 496.012, 496.138, 496.146 and 496.162
AMEND: Chapter 635, Division 170
SUMMARY: Amend rules relating to the Black Bear Management Plan. This action is necessary to meet plan review requirements and to implement the management plan.
LAST DATE FOR COMMENT: 3-8-93
CONTACT PERSON: Walt VanDyke
ADDRESS: Department of Fish and Wildlife, P.O. Box 50, Portland, OR 97207
TELEPHONE: 229-5400 - ext. 446

* * * *

DATE:	TIME:	LOCATION:
3-17-93	TBA	Department of Fish and Wildlife 2501 S.W. First Avenue Portland, OR 97201

Exact time and location will be available 10 days prior to the meeting.
HEARINGS OFFICER: Oregon Fish and Wildlife Commission
STATUTORY AUTH: ORS 496.012, 496.138, 496.146 and 496.162
AMEND: Chapter 635, Division 180
SUMMARY: Amend rules relating to the Cougar Management Plan. This action is necessary to meet plan review requirements and to implement the management plan.
LAST DATE FOR COMMENT: 3-8-93
CONTACT PERSON: Walt VanDyke
ADDRESS: Department of Fish and Wildlife, P.O. Box 50, Portland, OR 97207
TELEPHONE: 229-5400 - ext. 446

* * * *

DATE:	TIME:	LOCATION:
3-17-93	*TBA	Department of Fish and Wildlife Commission Room 2501 SW First Avenue Portland, OR 97201

HEARINGS OFFICER: *An agenda will be available 10 days prior to the meeting and is available by writing or calling the address below.
STATUTORY AUTH: ORS 496.138, 496.146 and 496.162
AMEND: OAR 635-11-175
SUMMARY: Amend rule which implement and manage the sport bounty fishery for northern squawfish.
LAST DATE FOR COMMENT: 3-15-93
CONTACT PERSON: Kay Brown
ADDRESS: Department of Fish and Wildlife, P.O. Box 59, Portland, OR 97207
TELEPHONE: 229-5400 - ext. 354

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

PERMIT AS A SHIELD

Rulemaking Proposal - Proposed Repeal of Language in OAR 340-45-080, "Effect of a Permit," and Replacement with New Language.

Date Issued:	March 19, 1993
Public Hearing:	April 19, 1993
Comments Due:	5:00 p.m, April 28, 1993

WHO IS AFFECTED: All domestic, industrial and agricultural wastewater treatment facilities regulated under National Pollutant Discharge Elimination System (NPDES) permits issued by the Department of Environmental Quality.

WHAT IS PROPOSED: The Department proposes to repeal OAR 340-45-080, "Effect of a Permit," and replace it with new language which is more descriptive and better conveys the Department's intent to extend "Permit as a Shield" protection to NPDES permit holders.

WHAT ARE THE HIGHLIGHTS: Under the proposal, new regulatory language has been prepared which will protect NPDES permit holders from violations of water quality rules or requirements not included in their permit and from water quality standards violations by pollutants which are included in their permit provided that specified effluent limitations that pertain to those pollutants are met. The "Permit as a Shield" protection is not extended to toxic effluent standards or ground water protection requirements. The permittee is not protected from liability resulting from violations of water quality standards, in effect at the time of permit issuance, resulting from pollutant discharges not specifically included in the permit through effluent limitations. The permittee is not protected from permit violations.

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

FOR FURTHER INFORMATION: - 1 -

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.

HOW TO COMMENT:

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

9:00 am, April 19, 1993
Department of Environmental Quality
Conference Room 3A, 811 S.W. Sixth Avenue
Portland, Oregon

Oral and written comments will be accepted at the public hearing. Written comments must be received by 5:00 p.m. on April 28, 1993, at the following address:

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

A copy of the Proposed Rule may be reviewed at the above address. A copy may be obtained from the Department by calling the Water Quality Division at 229-5065 or calling Oregon toll free 1-800-452-4011.

WHAT IS THE NEXT STEP:

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

ACCOMMODATION OF DISABILITIES

In order to accommodate persons with physical disabilities, please notify the Department of any special physical or language accommodations you may need as far in advance of the meeting date as possible. To make these arrangements, contact Tom Lucas calling toll free within Oregon 1-800-452-4011 or (503) 229-5696. For the hearing impaired, the Department's TDD number is (503) 229-6993.

Accessibility Information: This publication is available in alternate format (e.g. large print, braille) upon request. Please contact Ed Sale in DEQ Public Affairs at 229-5766 to request an alternate format.

MW\WC11\WC11234.5

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal

for

Proposed Repeal of Language in OAR 340-45-080, "Effect of a Permit," and Replacement with New Language

Rulemaking Statements

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

1. Legal Authority

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

2. Need for the Rule

OAR 340-45-080, "Effect of a Permit," incorporates language from federal law which allows compliance with the conditions of a National Pollutant Discharge Elimination System (NPDES) permit to constitute compliance with key provisions of the Clean Water Act and Oregon water quality rules and statutes. The rule was adopted so the regulated community can have certainty that if they are in compliance with their permit they cannot be sued for a violation of a new rule that has not yet been embodied in their permit or a requirement the Department chose not to include in their permit.

The Department is proposing to repeal the language in OAR 340-45-080, and adopt new language which is similar to the existing rule but which includes more descriptive language and is intended to be more clear as to intent. The proposed new rule also explicitly allows the Department to take enforcement action against a permittee for violations of water quality standards, in effect at the time of permit issuance, by a permittee that are not implemented through an effluent limitation but are prohibited in permit conditions without specific numerical effluent limitations.

3. Principal Documents Relied Upon in this Rulemaking

Report to the Environmental Quality Commission, "Proposed Adoption of Rule Regarding Use of Permit as a Shield Language in NPDES Permits," July 1992.

Public Law 100-4, "The Clean Water Act As Amended by The Water Quality Act Of 1987," Section 402(K).

Code of Federal Regulations (CFR) 40 CFR 122.5.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Proposed Repeal of Language in OAR 340-45-080, "Effect of a Permit," and Replacement with New Language

Fiscal and Economic Impact Statement

Introduction

The proposed rule change is not expected to have any positive or negative fiscal or economic impact on DEQ, the regulated community or the general public regarding the economics associated with construction and operation of treatment facilities and sewer systems. Any impact from the proposed rule will be indirect and related to liability and risk.

General Public

The proposed rule change should not have any impact on the general public. To the extent that the rule change may result in more efficient operation of treatment and collection facilities there may be a small positive fiscal impact.

Small and Large Businesses

Small and large businesses with treatment facilities operating with National Pollutant Discharge Elimination (NPDES) permits will experience positive but indirect fiscal and economic impacts. The rule will clarify language such that these permittees can operate with a high degree of certainly that if they are in compliance with their permit they cannot be successfully sued for a violation of a new rule or other requirement that has not been embodied in their permit. They will also be protected from a violation of a rule or requirement that DEQ chooses to not include in their permit. This reduction in liability and increase in degree of certainty should have positive benefits that could result in more efficient operation of treatment facilities. The rule change could also reduce legal and administrative costs.

Local Governments

The fiscal and economic impacts on local governments with NPDES permits should be the same as those described above for small and large businesses. That is, the reduction in liability and

increase in certainty could result in lower operation costs.

State Agencies

- DEQ. The proposed rule change will not have any fiscal or economic impact on the Water Quality Division. There will not be any change in budgets, operating expenses or staffing levels. The rule change will be incorporated into the existing work program associated with permit writing, compliance and enforcement.

-Other State Agencies. Only a few state agencies now have facilities with separate domestic treatment systems which require an NPDES permit. The impact on those permittees will be similar to the impacts described above for businesses and local governments.

State of Oregon
DEPARTMENT OF ENVIRONMENTAL QUALITY

Rulemaking Proposal
for
Proposed Repeal of Language in OAR 340-45-080, "Effect of a Permit," and Replacement New Language

Land Use Evaluation Statement

1. Explain the purpose of the proposed rules.

OAR 340-45-080, "Effect of a Permit," incorporates language from federal law which allows compliance with the conditions of a National Pollutant Discharge Elimination System (NPDES) permit to constitute compliance with key provisions of the Clean Water Act and Oregon water quality rules and statutes. The rule was adopted so the regulated community can have certainty that if they are in compliance with their permit they cannot be sued for a violation of a new rule that has not yet been embodied in their permit or a requirement the Department chose not to include in their permit.

The Department is proposing to repeal OAR 340-45-080, and adopt a new rule, OAR 340-45-085, which is similar to the existing rule but which includes more descriptive language and is intended to be more clear as to intent. The proposed new rule also explicitly allows the Department to take enforcement action against a permittee for violations of water quality standards, in effect at the time of permit issuance, by a permittee that are not implemented through an effluent limitation but are prohibited in permit conditions without specific numerical effluent limitations.

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

Yes X No ____

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

Issuance of NPDES waste discharge permits.

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

Yes X No ____ (if no, explain):

[signature] 3/8/93

Division Intergovernmental Coord. Date

ATTACHMENT C

State of Oregon
Department of Environmental Quality Memorandum

Date: May 12, 1993

To: Environmental Quality Commission

From: Barbara Burton, Hearings Officer

Subject: Presiding Officer's Report for Rulemaking Hearing.

Hearing Date and Time: April 19, 1993 beginning at 9:00 a.m.

Hearing Location: Conference Room 3A, DEQ Headquarters, 811 S.W. Sixth Ave, Portland, Oregon.

Title of Proposal: Proposed Repeal of Language in OAR 340-45-080, "Effect of a Permit," and Replacement with New Language.

The rulemaking hearing on the above titled proposal was convened at 9:00 a.m.. People were asked to sign witness registration forms if they wished to present testimony. People were also advised that the hearing was being recorded and of the procedures to be followed.

Nine people were in attendance. One person signed up to give testimony.

Prior to receiving testimony, Tom Lucas of the Water Quality Division briefly explained the specific rulemaking proposal and the reason for the proposal.

People were then called to testify in the order of receipt of witness registration forms and presented testimony as noted below.

Lorrie Skurdahl--Sr. Assistant County Attorney, Washington County.

Lorrie Skurdahl is chair of the legal committee of the Oregon Association of Clean Water Agencies (ACWA). Her testimony was given on behalf of this organization. She also submitted detailed written testimony to supplement her oral testimony. Her entire testimony is presented below.

Ms. Skurdahl testified that ACWA supports the proposed rule. She stated that AWCA did have some concerns with the rule and would prefer language that more closely corresponds to section 402(k) of the Clean Water Act, as did the rule adopted by the Commission in July 1992. She testified that under section 402(k) of the Clean Water Act, a permittee is subject to enforcement for failure to meet the terms of its permit, but a permittees legal liability is defined by compliance with its NPDES permit. Compliance with the permit then constitutes compliance with the Clean Water Act and implementing rules.

Ms. Skurdahl testified that she had two specific concerns with the proposed rule: section 1c and section 4.

She believes that section 1c of the proposed rule is inappropriately located, and could expose permittees to liability if compliance with an emergency rule were inconsistent with the terms of its permit. An example was given of a conflict between permit conditions and emergency regulatory requirements. Rather than including it in section 1 as an exception to the "Effect of a Permit," subsection 1c should be a freestanding statement. An example was submitted showing a suggested relocation of section 1c.

She is concerned that section 4 of the proposed rule could result in an enforcement action for violations of water quality standards even if the permittee is in compliance with the terms of its permit. She believes that a more appropriate action would be for DEQ to modify all permits which are contributing to the problem. Concern was expressed that section 4 could have a serious impact on small communities that do not have the capability to continually monitor their discharges and the receiving waters. Concern was also expressed that the cumulative effect of multiple discharges could result in potential liability for permittees downstream of a discharger that was not meeting the terms of its permit.

She believes it is sound public policy for the State to articulate clearly what permittees must do in their permit, and hold them to it. She does not believe that it is appropriate within the context of an NPDES permit, if new data demonstrates a previously unknown action or effect or if DEQ made a mistake, to punish a permittee by severe penalties for those situations in

which its lawful discharge causes a standards violation. She supports making requirements clear through permits and giving permittees appropriate permit protection as long as they comply with those permit provisions.

There was no further testimony and the hearing was closed at 9:30 a.m..

WRITTEN TESTIMONY SUBMITTED FOR THE RECORD

Gregory L. Kellogg, Chief, Wastewater Management and Enforcement Branch, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

EPA supports the proposed rule as written and concluded that "...it complies with federal regulations while maintaining the State's ability to be more stringent as necessary."

Mark Slezak, Assistant General Mgr., Columbia Forest Products, Klamath Falls.

Columbia Forest Products supports the proposed new rule language, and supports "...the intention that when an operator is in compliance with the terms and conditions of their permit, that they would be protected from enforcement action of citizen suit."

Rebecca Stanfield, Legal Intern, Western Environmental Law Clinic, University of Oregon Law Center, Eugene. Testimony submitted on behalf of Columbia River United.

The Western Environmental Law Clinic opposes the proposed rule and believes that it is illegal. The Law Clinic provided three reasons for its opposition, as follows:

The Law Clinic testified that the Clean Water Act prohibits permittees from discharging any amount of a pollutant which is not specifically authorized in the permit. Based on this interpretation of the Act, the Law Clinic stated that the proposed rule could be illegal because it could be construed to exempt them from this requirement (no discharge of unpermitted pollutants).

The Law Clinic stated that the proposed rule violates ORS 468.015 and ORS 468B.020 of Oregon law. In particular, it will be allowing waste to be discharged which would otherwise be prohibited by law.

The Law Clinic testified that the proposed rule was unnecessary, an administrative burden on DEQ, and will stymie implementation of the Clean Water Act. The testimony noted several existing mechanisms in place to ensure that permittees have ample opportunity to be aware of their responsibilities. The testimony also noted that permit processing would be cumbersome and that the agency would be subject to burdensome lawsuits. Finally, the Law Clinic stated that the proposed rule would delay implementation of regulations.

Floyd Collins, Assistant Director of Public Works, City of Salem.

The City of Salem submitted testimony requesting that the Commission adopt the proposed rule. The City stated that the proposed rule would afford permittees opportunity to defend themselves against third party lawsuits while operating within the scope of their permit. The City noted that the proposed rule was more restrictive than the "permit as shield" provisions of section 402(k) of the Clean Water Act, and expressed a preference for the language in the Act.

Daniel B. Helmick, Manager, Fiscal and Regulatory Affairs, Clackamas County. Testimony submitted on behalf of the Tri-City Service District and Clackamas County Service District No. 1.

Clackamas County submitted testimony supporting adoption of the proposed rule. The County noted that for two years they had been requesting "permit as a shield" protection identical to language in section 402(k) of the Clean Water Act. The County stated that they supported the language adopted by the Commission in July 1992 even though it was more restrictive then the federal language. Clackamas County believes that the proposed rule is even more restrictive than the rule adopted in July, and is the minimum level of protection that can be supported by the County.

Karl Anuta, Northwest Environmental Defense Center (NEDC), Portland.

NEDC testified that while the proposed rules are an improvement over the rules adopted in July 1992, they are unnecessary and inappropriate. NEDC cited several State and federal statutes and policies in support of their position. NEDC also cited earlier testimony submitted in opposition to the rule adopted July 1992.

Loretta Skurdahl, Assistant County Counsel, Washington County.

Since Ms. skurdahl's written testimony is intended to supplement her oral testimony, the written testimony is not summarized in this section but rather is included in the oral testimony above.

ATTACHMENT D

LIST OF WRITTEN COMMENTS

RECEIVED

1. Loretta S. Skurdahl, Sr. Assistant County Counsel, Washington County.

2. Karl G. Anuta, Northwest Environmental Defense Center.

3. Daniel B. Helmick, Manager, Fiscal and Regulatory Affairs, Clackamas County

4. Mark Slezak, Assistant General Manager, Columbia Forest Products, Klamath Falls.

5. Gregory L. Kellogg, Chief, Wastewater Management and Enforcement Branch, EPA Region 10.

6. Rebecca Stanfield, Western Environmental Law Clinic, Eugene.

7. Floyd Collins, Assistant Director of Public Works, Salem.

ATTACHMENT E

State of Oregon
Department of Environmental Quality Memorandum

Date: May 12, 1993

To: Environmental Quality Commission

From: Tom Lucas, Municipal Wastewater Section

Subject: Department's Evaluation of Public Comment--Permit as a Shield

There were seven respondents that presented oral or written testimony. Two respondents supported the proposed rule as written. Three respondents supported the proposed rule but expressed some reservation about parts of the rule. Two respondents opposed the rule. Significant issues are presented below.

Section 1c of the proposed rule should be a freestanding section because of potential conflicts between permit requirements and new regulatory requirements.

Department Response: The potential for conflict would be limited but the Department agrees that it is possible. For this reason, section 1c of the proposed rule will be moved to a proposed new section 5, and reworded slightly. The intent of the language now in section 1c will remain the same.

The proposed rule is supported, however preference is expressed that language in the rule be more similar to the language in section 402(k) of the Clean Water Act. This testimony concerned section 4 of the proposed rule.

Department Response: Department staff do not believe that elimination of section 4 would be proper. The ability to take enforcement action is essential to ensure rapid and meaningful responses to discharges that cause identifiable violations of water quality standards. Ambient water quality standards are generally effective and must be met regardless of whether they have been translated into specific load allocations and effluent limitations in an NPDES permit.

The requirements inherent in section 4 are not new. Similar language has been a part of the Department's rules since 1977 (see Division 41, State-Wide Water Quality Management Plan). An example is the basin plan for the Willamette Basin. OAR 340-41-445(2) states "No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of the following standards in the waters of the Willamette River Basin:..." Similar language has also been included in NPDES permits since at least 1977.

The proposed rule is illegal because the Clean Water Act prohibits permittees from discharging any amount of a pollutant which is not specifically authorized in the permit, and the proposed rule could be construed to exempt them from this requirement.

Department Response: The Department disagrees with this interpretation. The proposed permit shield rule is not intended to authorize illegal discharges of pollutants. When a permittee submits an application for an NPDES permit to discharge pollutants it is required to identify those pollutants or categories of pollutants for which the permit is sought. When the Department issues an NPDES permit it reviews the application and other available information and determines the pollutants to be regulated through effluent limitations based upon applicable law and regulations.

The permit shield rule is only intended to protect permittees in compliance with the resulting permit. In the Department's view the rule will not sanction discharges of pollutants not reasonably identified in the permit application or during the permitting process. The Department recognizes, however, that there is currently federal litigation pending on this issue and that EPA intends to issue an interpretation to clarify its position under federal law.

The proposed rule is illegal because it violates sections of Oregon Revised Statutes, specifically ORS 468B.015 and 468B.020.

Department Response: The Department disagrees with this interpretation of the Oregon law. ORS 468B.015 declares it public policy "To provide that no waste be discharged into any waters of this state without first receiving the necessary treatment or other corrective action to protect the legitimate beneficial uses of such waters." ORS 468B.020 requires the Department to use "...all available and reasonable methods necessary to achieve the purposes of ORS 468B.048 and to conform to the standards of water quality and purity ... ." This language in State law is consistent with language in the federal regulations. If a pollutant is not likely to cause a water quality standards violation or an impairment of established beneficial use, then an effluent limit for this pollutant is not required.

The proposed rule is unnecessary for clarification of permittee responsibilities.

Department Response: A major purpose of the proposed rule is to provide clarification to permittees so they can have certainty that if they are in compliance with their permit they cannot be sued for a violation of a new rule that has not yet been embodied in their permit or a requirement the Department chose not to include in their permit. The Department believes this clarification is helpful in identifying permittee responsibilities. Other elements of the proposed rule also enhance clarification of responsibility. The proposed rule explicitly states that the Commission, pursuant to a declaration of an emergency, can adopt rules which immediately apply to existing permits. The proposed rule explicitly exempts certain elements from the "permit as a shield" such as toxic effluent discharges. The proposed rule clearly establishes permittee responsibility for water quality standards violations resulting from discharges not subject to effluent limitations in the permit.

The proposed rule places enormous administrative burden on DEQ staff.

Department Response: The Department disagrees with this testimony. The proposed rule should substantially clarify permittee responsibilities. To the extent that responsibility is clarified the Department's administrative burden should be lessened rather than increased.

The proposed rule is unsound environmental and public health policy.

Department Response: The Department does not believe that the proposed rule will have a negative impact on the environment or public health. The Department believes that it will continue to have full authority to regulate and enforce all existing and new Oregon water quality standards and effluent limits.

The proposed rule is contrary to state and federal antidegradation standards and federal antibacksliding policies.

Department Response: The Department disagrees with this testimony. The proposed rule will not result in increased discharges of pollutants. Consequently, the proposed rule is not in conflict with State antidegradation policies or with the federal antibacksliding policy.

The proposed rule is contrary to the directives in ORS 183.335(2) (B & D) concerning need for the proposed rule and disclosure of fiscal impact.

Department Response: The Department has prepared a statement of need for the proposed rule and a fiscal impact of the proposed rule. Both documents and the proposed rule were included in the Department's notification to interested and affected public. The notification was sent to a broad mailing list and included all current domestic and industrial waste treatment and discharge permit holders, all persons who have expressed interest in receiving copies of the Department's proposed water quality and related rules, and all other persons who expressed an interest in receiving a copy of the proposed rules. The name and phone number of a person to contact for more information was provided in the notification.

The proposed rule is contrary to the DEQ/EQC Strategic Plan.

Department Response: The Department does not believe the proposed rule conflicts with the plan. The proposed rule is not anticipated to have any impact on water quality.

The proposed rule is contrary to the requirement of ORS 197.180, that the rule comply with statewide planning goals.

Department Response: The Department issued a "Land Use Evaluation Statement" and included this statement in its public notification to interested and affected public. Based on this earlier evaluation the Department concluded that the proposed rule is consistent both with statewide planning goals and with the interagency agreement between DEQ and the Department of Land Conservation and Development.

ATTACHMENT F

CHANGES MADE TO ORIGINAL RULEMAKING PROPOSAL

Based on the evaluation of oral and written testimony only one change was made to the proposed rule. Section 1c in the proposed rule was moved and restated in a new section 5 (see attachment A, proposed rule). The rule language was reworded slightly but the intent of the language is the same. Testimony was submitted stating that the language in 1c was inappropriately located and could expose permittees to liability if compliance with an emergency rule were inconsistent with the terms of its permit. An example was given of a conflict between permit conditions and an emergency regulatory requirement. The Department believes that the potential for conflict would be limited but possible.

ATTACHMENT G

State of Oregon
Department of Environmental Quality **Memorandum**[†]

Date: March 19, 1993

To: Interested and Affected Public

Subject: Rulemaking Proposal - Proposed Repeal of Language in OAR 340-45-080, "Effect of a Permit," and Replacement with New Language.

This memorandum contains information on a proposal by the Department of Environmental Quality (DEQ) to:

a. Repeal the language now contained in OAR 340-45-080 under the title "Effect of a Permit" which was adopted on July 23, 1992; and

b. Adopt new language to accomplish the purpose that was intended in the July 23, 1992 rule adoption.

Repeal of the existing rule is proposed in response to a petition for review filed with the Court of Appeals. In preparing for the court review, the Department concluded that rulemaking notice procedures may not have been adequate, and the rule could be found to be invalid. The Department proposes to clarify the matter and resolve the appeal process by repealing the existing rule, and simultaneously initiating a new rule adoption proceeding.

The proposed new rule will provide "Permit as Shield" protection to municipal and industry permittees operating under National Pollutant Discharge Elimination System (NPDES) permits. "Permit as a Shield" protection means that if a permittee is in compliance with the terms and conditions of their permit, they would be deemed to be in compliance with specific statutes and rules that the permit is intended to implement, and would be shielded from enforcement action or citizen suit for alleged violations of those specific statutes and rules.

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

The wording of the proposed new rule has been modified to more clearly convey to permit holders the extent of protection that is afforded by the rule.

What's in this Package?

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

Attachment A	The actual language of the current rule proposed to be deleted and the actual language of the proposed new rule.
Attachment B	The "Legal Notice" and the general "Public Notice" of the Rulemaking Hearing. (required by ORS 183.335)
Attachment C	The official Rulemaking Statements for the proposed rulemaking action. (required by ORS 183.335)
Attachment D	The official statement describing the fiscal and economic impact of the proposed rule. (required by ORS 183.335)
Attachment E	A statement providing assurance that the proposed rules are consistent with statewide land use goals and compatible with local land use plans.

Hearing Process Details

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

Date: April 19, 1993
Time: 9:00 a.m.
Place: Conference Room 3A, Department of Environmental Quality, 811 S.W. Sixth Ave., Portland.

Deadline for submittal of Written Comments: 5:00 p.m., April 28, 1993. Address comments to Water Quality Division, Department of Environmental Quality, 811 S.W. Sixth Ave., Portland, OR 97204.

Barbara Burton will be the Presiding Officer at this hearing. Following close of the public comment period, the Presiding Officer will prepare a report which summarizes the oral testimony presented and identifies written comments submitted.

The Environmental Quality Commission (EQC) will receive a copy of the Presiding Officer's report and all written comments submitted. The public hearing will be tape recorded, but the tape will not be transcribed.

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

What Happens After the Public Comment Period Closes

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

The EQC will consider the Department's recommendation for rule adoption during one of their regularly scheduled public meetings. The targeted meeting date for consideration of this rulemaking proposal is June 10, 1993. This date may be delayed if needed to provide additional time for evaluation and response to testimony received in the hearing process. You will be notified of the time and place for final EQC action if you present oral testimony at the hearing or submit written comment during the comment period or ask to be notified of the proposed final action on this rulemaking proposal.

The EQC expects testimony and comment on proposed rules to be presented **during** the hearing process so that full consideration by the Department may occur before a final recommendation is made. The EQC may elect to receive comment during the meeting where the rule is considered for adoption; however, such comment will be limited to the effect of changes made by the Department after the public comment period in response to testimony received. The EQC strongly encourages

people with concerns regarding the proposed rule to communicate those concerns to the Department at the earliest possible date so that an effort may be made to understand the issues and develop options for resolution where possible.

Background on Development of the Rulemaking Proposal

What is the problem

On July 23, 1992, the EQC adopted a new rule, OAR 340-45-080, entitled "Effect of a Permit," which specifies that compliance with a permit constitutes compliance, for purposes of enforcement, with specified sections of the federal Clean Water Act (CWA) and specified sections of Chapter 468 of Oregon Revised Statutes (ORS 468). This rule, commonly known as "Permit as a Shield," was intended to protect permit holders, **as long as they are in compliance with their permit,** from enforcement actions and citizen lawsuits under the provisions of the Federal Clean Water Act relating to violations of regulatory requirements that are required to be addressed by permit effluent limitations. Section 402 of the CWA provides such protection. The adopted rule was intended to extend the protection of the federal shield provisions to Oregon permittees, and clarify its applicability in Oregon.

In the fall of 1992, the Northwest Environmental Defense Center (NEDC) petitioned the Court of Appeals for a review of the rule, citing both procedural and substantive reasons. In preparing the record of the rule adoption process for submittal to the Court of Appeals, the Department concluded that the rulemaking notice may not have been adequate, and that it would be prudent to repeal the rule adoption process rather than proceed through the appellate process. Therefore, the Court was notified of the Department's intent to repeal the existing rule and simultaneously proceed with a new rule adoption proceeding to address the concerns intended to be addressed in the original rule. The Department also proposes to reword the rule to further clarify its intent and meaning.

The new rule is proposed to address concerns initially expressed by the Association of Clean Water Agencies (ACWA) and several municipalities during permit renewal proceedings. These concerns were not addressed by the Department in the permit renewal process and were among the issues raised in permit appeals filed by several municipalities. Arguments presented by ACWA and municipalities suggested, because of increased enforcement by the Department and increased numbers of third party lawsuits, that liability for permit holders has substantially increased in recent years.

Section 402(k) of the Federal Clean Water Act and rules promulgated by the Environmental Protection Agency (40 CFR 122.5) provide that compliance with the terms of a National Pollutant Discharge Elimination System (NPDES) permit constitutes compliance, for purposes of enforcement, with specified effluent limit related provisions of the Clean Water Act (and related rules). The protection afforded by Section 402(k) and §122.5 is often referred to under the label "Permit as a Shield" and is included in Permits issued by the U.S. Environmental Protection Agency. Similar shield language is provided for in statutes related to other federally mandated permits.

Language that has been historically included in NPDES permits issued by DEQ is believed by the Municipalities to deny them the "shield" protection afforded by federal law and rule. Therefore, they have sought rulemaking as a means of clearly establishing the protection available under federal law and rules.

Municipalities also believe that permit holders should not be subject to enforcement or citizen suit for failure to immediately comply with any new rule which is adopted during the life of their permit and which is not addressed in their permit. Further, municipalities do not believe they should be subject to enforcement or citizen suit for a violation of federal law or rule provisions that are required to be addressed in permits, but that DEQ either chose not to include or otherwise failed to include.

Finally, Municipalities argue that extending the "shield" protection of the federal law to Oregon permittees does not adversely affect water quality; it clarifies their legal liabilities and potentially reduces their expenses associated with the defense of enforcement and citizen suit actions.

During the public comment period on the original rule, concerns were expressed by citizens and environmental groups. Testimony was submitted which stated that there is no reason for the rule and that permittees should be responsible for complying with new regulations regardless of whether they are embodied in a permit; the rule will make discharge of pollutants a right rather than a privilege; and the new rule deprives citizens of an important measure for ensuring that water quality standards are met.

This rule proposal is an effort to clarify these issues for the public and all permittees and provide a settlement of some of the issues raised in the municipal permit appeals.

How does this proposed rule help solve the problem

The proposed new language will address municipal concerns and extend the federal "Permit as a Shield" protection to NPDES permit holders. The proposed rule language seeks to clarify the extent to which compliance with the terms of a permit will be deemed compliance with requirements of statutes and rules. The reader should refer to Attachment A for the full text of the proposed rule. The essential features of the proposed rule language are discussed as follows:

1. The proposed rule references Sections 301, 302, 306, 307, 318, 403 and 405 (a) and (b) of the Clean Water Act and Sections .030, .035, and .048 of ORS Chapter 468B. The Clean Water Act sections refer to regulatory requirements that are to be addressed in permits by effluent limitations. The State Statutory sections refer to effluent limitations, implementation of federal requirements, and water quality standards.

2. The proposed rule language considers permit holders to be in compliance with the regulatory requirements of the above sections as long as they meet the related effluent limitations contained in their permit.

3. Toxic effluent provisions contained in Section 307 of the CWA and OAR Division 41, State-Wide Water Quality Management Plan, are specifically excluded from any enforcement shield the rule may afford. This means that violation of a standard or requirement relating to a toxic pollutant may be subject to enforcement or citizen suit, even though the permittee may be in compliance with a permit limitation related to that standard or requirement. Federal law prohibits extension of the enforcement shield provisions to requirements related to federally adopted toxics standards.

4. The proposed rule language excludes from shield protection any water quality standards violations, in effect at the time of permit issuance, which are caused by pollutants other then those addressed by specific effluent limitations in the permit.

5. The proposed language excludes standards for sewage sludge and disposal adopted under Section 405(d) of the CWA from the enforcement shield, but if permittees are in compliance with permit conditions which implement standards for sewage sludge use or disposal, then this (the compliance with the permit) becomes an affirmative defense in any enforcement action brought for violation of the standard. This exclusion is consistent with the Federal shield rule provisions.

6. The proposed language only refers to National Pollutant Discharge Elimination System (NPDES) permits. Water Pollution Control Facility (WPCF) permits are issued pursuant to state law for waste treatment and disposal that does not involve effluent limits for discharge to navigable waters. WPCF permits are not proposed for inclusion under this rule.

7. Ground Water Quality Protection requirements contained in OAR 340, Division 40, Ground Water Quality Protection, are specifically excluded from enforcement shield provisions of this rule.

8. New rules adopted by the EQC, pursuant to a declaration of an emergency by either the Governor or the EQC, that specifically are to affect existing permits are excluded from the enforcement shield provisions of this rule.

The following assumptions and examples are offered in order to better understand the intent and effect of the proposed rule.

a. Assumption: If the state, in issuing an NPDES permit, fails to include in the permit an effluent limit related provision that the Clean Water Act requires to be addressed in a permit, the permittee should not be vulnerable to enforcement action or citizen suit for violation of that regulatory provision.

In such an instance, the state would be subject to appropriate action or citizen suit for failing to discharge its obligations.

If such an instance were to occur, DEQ would initiate modification of the permit to correct the error or oversight and include the required regulatory provisions. The rule specifically preserves the right to initiate such permit modifications.

b. Assumption: To the extent that an effluent limit is included in a permit to implement a water quality standard, compliance with the permit limit should shield the permittee from enforcement or citizen suit related to that parameter in the event the instream water quality standard is not met.

In such an instance, the fact that the water quality standard is found to be violated should result in the water body being designated water quality limited, and require the establishment of a Total Maximum Daily Load (TMDL) for the water body, allocation of the TMDL to the contributing sources, revision of permits to incorporate the more stringent limitation for the pollutant parameter, and establishment of schedules for compliance.

c. Assumption: A water quality standard, in effect at the time of permit issuance, is found to be violated outside of the defined mixing zone for a permittee, no effluent limitation for that pollutant has been included the permit, and the pollutant is present in the permittee's discharge.

In such an instance, the permittee would be subject to enforcement action or citizen suit relative to the standard violation. All permits currently contain the following permit provision:

"Not withstanding the effluent limitations established by this permit, no wastes shall be discharged and no activities shall be conducted which violate Water Quality Standards adopted in OAR 340-41-xxx except in the defined mixing zone: ..."

There may be other factors to consider relative to this situation, however. Assume further that:

1) The permittee disclosed the existence of the pollutant in their permit application, and current discharge levels are consistent with the levels revealed in the application.

In such an instance, the Department either (a) concluded that the pollutant parameter was of incidental significance and did not warrant establishment of an effluent limit and monitoring provision, or (b) made an error and failed to include the limit. In either instance, the permittee might argue that it should not be subject to enforcement or citizen suit for the water quality standard violation.

In order to clearly afford itself of potential shield protection, the permit applicant would have the responsibility to make sure that the Department includes specific limitations for all pollutants they deem significant in their permit.

The practical remedy in such a situation would be to amend the permit to include the appropriate limit and impose a schedule for compliance.

2) The permittee disclosed the existence of the pollutant in their permit application, and the current discharge levels are **significantly greater** than the levels cited in the application.

In such an instance, the permittee would rather clearly be vulnerable to enforcement action and citizen suit. The fact that the discharge level is significantly greater than the level cited in the application would be interpreted as an increase in the discharge and a change from the conditions previously evaluated by the Department.

In general, the obligation of a permittee is to advise the State of changes in their discharge and apply for modification of their permit to accommodate increased discharge levels or changes in conditions specifically acknowledged and authorized in their permit.

If such an instance were to occur, the Department may also elect to modify the permit to clarify the expectations and impose effluent limits for the parameter which facts (standard violation) now show to be significant.

3) The permittee did not disclose the existence of the pollutant in their permit application.

In such instance, the permittee would clearly be vulnerable to enforcement action and citizen suit. This would be the case whether the permittee knew of the constituent in their discharge and failed to disclose it or did not disclose it because they were unaware of it.

d. Assumption: A water quality standard for a toxic pollutant is violated, and the toxic pollutant is present in the discharge of the permittee. There may or may not be a discharge limitation for the toxic pollutant in the permit.

In such instance, the permittee may be vulnerable to enforcement action and citizen suit if the case can be made that their discharge is causing the toxic standard violation. This would be true even if the permittee was in compliance with an effluent limit for the toxic pollutant in their permit. Federal law specifically precludes shielding the permittee for violations of regulatory requirements for toxics.

The Department would probably propose to modify a permit to include appropriate new or revised limits for the toxic pollutant in such an instance as a means of addressing the issue of future water quality protection.

e. Assumption: The Environmental Quality Commission adopts a new water quality standard for a pollutant parameter. Two scenarios are possible:

1) The new standard is effective upon filing, no emergency has been declared by the Governor or the EQC, and the rule adopting the standard does not specifically address applicability to permittees.

In such an instance, permittee's would be shielded from enforcement or citizen suit relative to a documented violation of the new standard during the term of their permit until the permit was modified to specifically address the new standard.

2) The new standard includes a declaration of an emergency by the Governor or the EQC, and a specific schedule or date when the standard will be applicable and existing sources will have to comply.

In such an instance, the implementation program in the rule would take precedence. Any violation of the standard after the date specified in the rule would not be shielded from enforcement, regardless of whether the standard is addressed in the permit by a specific effluent limitation.

These assumptions and situations are not intended to be all inclusive, but are presented to assist in understanding the intended interpretation and application of the proposed rule.

The net effect of the proposed rule is to clarify responsibilities and expectations for the Department, permittees and the public. If a permittee wishes to maximize the shield from enforcement that is possible under this rule, it has a burden to fully and accurately disclose facts regarding its proposed discharge and make sure that the permit finally issued includes limitations for potentially significant pollutants. The Department has a burden to make sure that the limits it places in permits will assure compliance with water quality standards, in effect at the time of permit issuance, in order to minimize the chances for a situation where a standard violation occurs and the permittee causing the violation is shielded from enforcement pending modification of the permit.

How was the rule developed

The proposed new rule language was developed in consultation with the Justice Department. The proposed language is based in part on section 402(k) of the Federal Clean Water Act which

provides the legal basis for the rule, and on the Code of Federal Regulations (CFR), 40 CFR 122.5. Substantial effort was made to improve readability and to clarify rule intent. The Department did not use an advisory committee in preparation of the new regulatory language.

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

The proposed new language should not have any significant impact on the water quality or the way water quality is managed in Oregon.

The regulatory language will affect members of the regulated community who are operating under an NPDES permit. The rule is a further clarification of the permittee's responsibility, liability, and vulnerability to enforcement action and citizen suit.

How will the rule be implemented

The proposed new rule language will apply to all NPDES permits now in force. It will be implemented after EQC adoption and after filing the rule with the Secretary of State. Appropriate adjustments necessary to reference the rule will be made in permit preparation formats for new permits, permit renewals and permit modifications. The format modifications are not necessary, however, for the proposed rule language to apply to current permits.

Are there time constraints

The Department believes that the existing rule language should be repealed and replaced with the proposed new language as quickly as possible. The clarification of language and proposed refinements should result in an improved rule which is much easier to understand and apply.

Contact for more information

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

Tom Lucas, Water Quality Division, Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, OR, 97204. Phone: (503) 229-5065.

Accessibility Information: This publication is available in alternate format (e.g. large print, braille) upon request. Please contact Ed Sale in DEQ Public Affairs at 229-5766 to request an alternate format.

Environmental Quality Commission

☐ Rule Adoption Item
☐ Action Item
☐ Information Item

Agenda Item F
June 10, 1993 Meeting

Title:

Innovative Response Policy

Summary:

The Innovative Response Policy defines a process for DEQ to apply rules differently from EPA in situations where there is legal authority to do so and there is a broader environmental goal to be served by taking such an approach. The policy states the goals to be served by exercising regulatory discretion and describes procedures and criteria for the Department. The Policy also requires the Department to report to Commission biennially on the number and type of innovative responses, the expected benefits of the approach, and evaluations of the decisions.

Department Recommendation:

It is recommended that the Commission approve a statement of EQC policy as presented in Attachment A of the Department Staff Report.

Report Author | Division Administrator | Director

May 19, 1993

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

State of Oregon
Department of Environmental Quality Memorandum†

Date: May 19, 1993

To: Environmental Quality Commission

From: Fred Hansen, Director

Subject: Agenda Item F, June 10, 1993, EQC Meeting

Innovative Response Policy

Statement of the Issue

The Innovative Response Policy defines a process for DEQ to apply rules differently from EPA in situations where there is legal authority to do so and there is a broader environmental goal to be served by taking such an approach.

Background

EPA rules are often written to ensure that an unwanted result, which could happen anywhere in the country, is stopped. Our approach, on the other hand, is to facilitate and promote a desired outcome and allow our enforcement program to address the unwanted result (violation). In addition, EPA rules are written for the country as a whole and may not address the specific problems or solutions that are likely to develop in Oregon. As a result, rule interpretations are necessary to address many problems that implementing agencies handle.

Sometimes the agency is presented with an opportunity to interpret the rules in a way that will yield a greater net environmental benefit. Often these situations will involve cross media tradeoffs. Currently there is no guidance on how to address these situations. In order to develop a policy, Fred Hansen convened and chaired an advisory committee. The members included Bob Prolman from Weyerhaeuser, John Harland from Intel, Joel Ario from OSPIRG, John Charles from OEC, Tom Zelenka from The Schnitzer Group, Anne Hill from First Interstate Bank, and David Paul, a local attorney. Jim Whitty from Associated Oregon Industries, Jim Craven from the American Electronics Association and John Loewy, a consultant, were invited as observers.

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

The policy describes the objectives of innovative responses and the process for identifying and reporting innovative responses to the EQC.

Alternatives and Evaluation

The advisory committee met over a period of several months. The committee considered options ranging from maintaining the current approach to establishing a complex prior notification system. The current approach allows for innovative responses but does so on an ad hoc basis. There are no guidelines for making decisions and for reporting these decisions to the Commission. One alternative considered was to establish a separate notification and hearing system for innovative responses. The advisory committee agreed that this was not warranted and that it could inhibit the development of new ideas and responses. There is ample opportunity for public input through already established processes and this would cover innovative response situations. The committee agreed that documenting and reporting to the EQC on innovative responses on a regular basis would streamline the process and allow the Department and the EQC to track and learn from the new approaches.

Summary of Any Prior Public Input Opportunity

The advisory committee included representatives from environmental organizations, industries, and a bank.

Conclusions

- The proposed policy provides guidelines and requires reporting on innovative responses.
- It does not create a process that is so complex as to discourage creative approaches.
- The advisory committee supports the proposed policy.

Recommendation for Commission Action

It is recommended that the Commission approve a statement of EQC policy as presented in Attachment A of the Department Staff Report.

Attachments

A. Proposed Policy on Innovative Response

Approved:

Section: Elana Stampfer

Division: Lydia Taylor

Report Prepared By: Elana Stampfer

Phone: 229-5889

Date Prepared: May 7, 1993

ES:es

Innovative Regulatory Applications

The variety of situations covered by environmental regulation has grown in complexity and number over the years and the number and nature of environmental regulations have increased in scope and complexity as well. Despite this growth, not all situations have a regulatory application that is tailor-made for that situation. There is still a strong necessity, and a strong desirability, to apply appropriate regulatory discretion in order to achieve the best environmental objective at the least cost to society and the regulated entity.

Such regulatory discretion is an important and routine function of DEQ. This discretion, of course, must be exercised within the confines of statute and regulation. Discretion should be used to achieve environmental compliance, uniform application of law in similar circumstances, and with no undue risk to the regulated entity.

The EQC believes a policy framework for application of DEQ's regulatory discretion is necessary and useful in guiding DEQ's day-to-day actions, and to inform the public of DEQ's regulatory practices. As such, this policy statement establishes objectives for the use of DEQ's regulatory discretion and encourages innovative regulatory approaches when there is legal authority to do so and there is a broader environmental goal to be served by taking an innovative approach. The EQC requests that DEQ track the implications of the policy and report back to the EQC on its consequences. The following gives the specifics of the policy:

1. EQC Policy Statement

Over the past several years it has become clear that a rigid application of EPA rules does not always provide the best environmental protection or the best solution for the regulated entity. The following sets out a process for DEQ to apply rules differently from EPA when we believe there is legal authority to do so and there is a broader environmental goal to be served by taking such an approach.

A. DEQ should consistently strive to achieve the following objectives when exercising regulatory authority:

- environmental compliance;
- common sense application of the regulations (e.g., achieving regulatory compliance in a straightforward manner that is cost effective for the regulated community);
- achievement of demonstrable environmental benefits in light of overall environmental risk posed by the process or facility in question;

- consideration of cross-media impacts that could result from or be influential to the implementation of the regulation in question; and

- promotion of pollution prevention and an overall decrease of environmental risk throughout the life cycle of the regulated pollutant.

B. The EQC recognizes that in a small number of situations, in order to achieve the goals stated above, DEQ must provide an innovative response in a regulatory situation. The EQC encourages DEQ to explore opportunities to be innovative in its regulatory interpretations so long as DEQ's regulatory interpretation conforms with statutory intent.

C. The EQC requests that DEQ report to the EQC on a periodic basis, at least every two years, about the lessons learned from making innovative regulatory decisions.

2. DEQ Process for Undertaking and Noting Innovative Responses

A. DEQ should establish internal procedures and criteria for implementing this policy, particularly as it relates to innovative regulatory interpretations. DEQ will identify criteria which would indicate that an innovative response has occurred. These criteria should include:

1. introduction of significantly new technology or process modification to achieve compliance;

2. inclusion of cross-media activities which yield net environmental benefit beyond the context of the original regulated discharge;

3. application of the regulations in a manner which diverges significantly from EPA non-binding guidance on the situation in question; and

4. implication of establishing a model for other situations that may, if the situation warranted, lead to rule making.

B. It is expected that DEQ's normal decision-making process is sufficient to encourage identification, consideration, and selection of innovative responses. Once an innovative response has occurred, DEQ should briefly record the nature of the activity involved, the regulatory interpretation made, the reasons why the decision was deemed innovative, and the expected net environmental benefit and decreased cost and/or complexity. These innovative responses would then be

monitored periodically to determine if DEQ's regulatory discretion achieved the expected benefits.

3. DEQ Report to EQC on Innovative Responses

On a biennial basis, DEQ is to prepare a report on innovative responses. The report is to provide the Commission with the following types of information:

1. the number and type of innovative responses DEQ had undertaken during the period covered by the report;

2. the expected benefits of the innovative responses; and

3. DEQ's evaluation of the benefits achieved by the decisions and the benefits and/or difficulties of the innovative approach in general.

DEQ is to use this summary to identify what appear to be emerging trends or models established by the innovative responses. In particular, DEQ should focus on those innovative responses that achieve significant benefits and appear to be applicable to other situations. In this case, DEQ could consider proposing regulatory modifications to support a broader application of the innovative response, as appropriate. Presentation of this report can also provide the interested parties with an opportunity to comment on the innovative response approach as a complement to the normal public hearing process.

4. EQC Response to DEQ's Innovative Response Report

DEQ's report provides the EQC an opportunity to evaluate the extent to which DEQ's innovative response approach had met or failed to meet the Department's and the public's needs. The EQC will alter this regulatory interpretation policy, as appropriate, to address any desired changes or improvements.

Environmental Quality Commission

☐ Rule Adoption Item
☐ Action Item
☒ Information Item

Agenda Item G
June 10, 1993 Meeting

Title:

Report on EPA PCB Grant Project

Summary:

This report summarizes the activities and preliminary findings of the PCB grant project which was undertaken by the Hazardous and Solid Waste Division in order to determine if there if a need for greater state presence in the regulation of PCBs. Activities were engaged to determine how much PCB is still in use, how much PCB is entering the environment, what is the regulatory status of PCB in Oregon and what is EPA's current and future role in PCB oversight. Anecdotal evidence indicate that there is still a PCB problem in Oregon, that the split roles between DEQ and EPA are not well defined and that states handle the TSCA/RCRA regulatory aspects of PCB using a variety of methods.

The regulation of PCB in Oregon presents a policy challenge for several reasons. First, PCB is not considered a federal hazardous waste and is therefore not regulated in the same way that wastes under Subtitle C of the Resource Conservation and Recovery Act (RCRA) are regulated. Second, regulation of PCB can include not only PCB waste but also PCB in use. DEQ does not normally regulate chemicals in use. And, a third complication arises since regulation of PCB cannot be delegated to states, therefore problems of duplicate regulation and preemption may arise.

This project was funded by grant from EPA Region 10 which is referred to as a decentralization grant under the Toxic Substance Control Act (TSCA). The purpose of the grant is for DEQ to evaluate its current regulatory program for PCBs and to determine whether statutory or regulatory changes are needed. The reason that DEQ's involvement in the regulation of PCB is particularly important today is because EPA is moving toward a reduction of federal TSCA resources dedicated to the regulation of PCB.

Department Recommendation:

Recommendations will be provided in a final project report.

Report Author	Division Administrator	Director
Susan Violette	Stephanie Hallock	Fred Hansen

May 20, 1993

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

Department of Environmental Quality

EPA PCB Grant Project
Status Report to the EQC
June 10, 1993

I. Purpose of Report

The purpose of this report is to provide the Oregon Environmental Quality Commission (EQC) with information about a Polychlorinated Biphenyls (PCB) grant project which has been undertaken by the Hazardous and Solid Waste Division. This project was funded by a grant from EPA Region 10 which is referred to as a decentralization grant under the Toxic Substance Control Act (TSCA). The purpose of the grant is for DEQ to evaluate its current regulatory program for PCBs and to determine whether statutory or regulatory changes are needed. By accepted TSCA's decentralization grant, DEQ agreed to consider implementing a broader state PCB regulatory program.

The regulation of PCB in Oregon presents a policy challenge for several reasons. First, PCB is not considered a federal hazardous waste and is therefore not regulated in the same way that wastes under Subtitle C of the Resource Conservation and Recovery Act (RCRA) are regulated. Second, regulation of PCB can include not only PCB waste but also PCB in use. DEQ does not normally regulate chemicals in use. And, a third complication arises since regulation of PCB cannot be delegated to states, therefore problems of duplicate regulation and preemption may arise.

The reason that DEQ's involvement in the regulation of PCB is particularly important today is because EPA is moving toward a reduction of federal TSCA resources dedicated to the regulation of PCB. Although TSCA resources are not expected to decrease overall, more of those resources will be used for regulation of the other 70,000 chemicals covered by TSCA. EPA is encouraging state's to take on more responsibility for the oversight of PCB disposal, provided TSCA rules are adopted or PCB is defined as a hazardous waste. Oregon has already adopted most TSCA rules, under its hazardous waste program, but if Oregon decided to define PCB as a state only hazardous waste, it could be a controversial rule making.

II. Background

The Toxic Substance Control Act of 1976 (TSCA) was primarily designed to: "regulate commerce and protect human health and the environment by requiring testing and necessary use restrictions on certain chemical substances, and for other purposes." The focus is on the manufacturing, distribution and use of toxic chemicals, although authority is provided to regulate the disposal of chemicals. This emphasis is different from the RCRA focus, which primarily regulates chemicals after use and from Comprehensive Environmental Response Compensation, and Liability Act (CERCLA or "Superfund") which primarily regulates cleanup of long-term contamination.

Unlike RCRA, TSCA cannot be delegated, by EPA, to states. States can, however, adopt rules which mirror the requirements of TSCA. In Oregon, PCB is addressed by statutes in ORS 466 and by rule in OAR 340-110. The Department has statutory authority to regulate PCB in use, illegal disposal, and treatment and disposal facilities. The Oregon Legislature did not provide clear authority for the regulation of PCB storage. In 1986, the EQC adopted TSCA PCB rules (40 CFR 761) by reference, but deleted sections covering the manufacturing and use of the chemical. In 1990, the EQC adopted federal revisions which were made to 40 CFR 761 to add manifesting and notification requirements for PCB disposal.

PCB is not defined as a hazardous waste in Oregon and is therefore not regulated under RCRA authority. The Department has not fully implemented its current state PCB regulatory authorities, primarily because of resource constraints and the need to concentrate on the broader hazardous waste program. DEQ does not have a specific PCB budget and does not receive any fees to regulate the chemical. The issue of duplicate regulation and potential preemption by EPA has been another obstacle to Oregon implementing a full PCB regulatory program. Primary responsibility for inspections and oversight of the PCB regulated community has been carried out by the Oregon Operations's Office of EPA Region 10.

PCB is different than many hazardous substances in that, as of 1979, manufacturing of the chemical was prohibited by EPA, but restricted use of the chemical is still allowed. The reason PCB is still in use today is due to the large amounts of PCB manufactured prior to regulation, PCB's resistance to degradation and due to the economic cost of replacing PCB containing electrical equipment. It is known that electrical utilities are phasing out their PCB equipment, but the PCB status of other industries is not as clear. The electrical utilities expect it will be 10-15 years before PCBs, greater than 50 ppm, are entirely phased out of their equipment.

III. Project Activities

To determine if there is a need for greater state presence in the regulation of PCB, it is important to know how much PCB is still in use and whether PCB is entering the environment through illegal disposal or other preventable means. It is also necessary to evaluate the current status of PCB regulation in Oregon and the effects any changes in state regulation would have on the regulated community. Further, it is necessary to understand EPA's oversight of PCB, both in the past and predictions for the future. To begin to answer these questions, staff undertook the following activities:

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Question 1). How much PCB is still in use and is PCB entering the environment through illegal disposal or other preventable means?

Activities -

- Reviewed EPA and DEQ's files on regulated community. The file search at DEQ included the Environmental Cleanup Division's list of contaminated sites and the DEQ Northwest Region spill log for PCB spills.

- Searched all known data bases which might contain information about the extent of PCB in use and the amount disposed annually. This included TSCA reporting requirements, the Toxics Release Inventory (required by Section 313 of the Emergency Planning and Community Right-to-Know Act), Oregon State Fire Marshal's Hazardous Substance Survey, local fire departments, DEQ's hazardous waste reporting system, and Chemical Waste Management of the NW's reports of waste disposed at the Arlington facility. Determined that information about the extent of PCB in use is not readily available; however information about the amounts disposed is more easily obtained, at least on a regional basis.

- Designed and conducted a survey of Oregon electrical utilities. The survey asked utilities to report on the amount of PCB still in use in 1991, the amount disposed in 1991, a target date for the utility to be PCB free and any comments the utility wished to add.

Question 2). What is the current status of PCB regulation in Oregon and what would be the effect of changes in state regulation on the regulated community?

Activities -

- Researched current and historical state and federal regulation and legislative authority concerning the regulation of PCB. Obtained several Oregon Attorney General opinions about state authority to regulate PCB generally and DEQ authority specifically.

- Sought comments from regulated community about the current regulation of PCB in Oregon. This included a meeting with members of the regulated community to discuss the project and gain their input. The meeting attendees are listed in attachment A.

- Clarified and documented statutory and regulatory authorities related to the PCB program. This included the evaluation of legislative and regulatory needs and potential adoption of 40 CFR 761.20 through 761.30 which provides rules for manufacturing, processing, distribution in commerce and use of PCBs and use of PCB items.

- Conducted a review of the differences between PCB and hazardous waste regulation in Oregon and what the effect of defining PCB as a HW would be on the regulated community.

Question 3). What is EPA's role in the oversight of PCB both in the past and predictions for the future?

Activities -

- Received training on federal regulation of PCB.
- Attended PCB inspector's training held by EPA and national PCB and TSCA meetings where the future of PCB regulation was discussed.
- Interviewed EPA Oregon Operation's PCB inspector, Chief of EPA's Chemical Regulation Branch and EPA Region 10's PCB Team Leader, PCB Environmental Engineer and Toxologist.
- Obtained data on the number of inspections by type of industry conducted since 1978.

One of the major pieces of DEQ's grant project was to determine the universe of PCB users and waste generators in Oregon. From staff's research it became apparent that a reliable answer to that question would be difficult to obtain with currently existing data. PCB has been excluded from most regulatory reporting requirements, and after determining the potentially regulated community, staff concluded that surveying the entire regulated community about PCB in use would be unpractical and politically difficult. The potential regulated community is very large and the likelihood of a sufficient response to a DEQ survey was considered to be low. However, staff did find that it was clearly possible to increase the Department's knowledge of where PCB still exists and how PCB waste is being managed, because so little was known. The most useful information about PCB in use and whether PCB is entering Oregon's environment came from 1.) a survey of Oregon utilities, 2.) a review of ECD contaminated sites and 3.) a review of DEQ and EPA documents of PCB incidents. This information is summarized in the attachments to this report.

III. Summary of Preliminary Findings

1) There is strong evidence to suggest that PCB is still a problem in Oregon today; however, it has not been possible to determine the full extent of this problem or whether the chemical is being sufficiently regulated.

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As determined from a 1991 DEQ survey of Oregon utilities, at least 5 million pounds of PCB contaminated material is currently in use by Oregon utilities with 84,000 pieces of electrical equipment containing over 50 ppm of PCB. This does not include the many other industries which are likely to still have PCB equipment. Examples of PCB incidences, in Oregon, since 1990 are shown in Attachment I. Out of the 22 known incidences, only two involved electrical utilities, while three involved lumber and wood product companies.

PCB is still used in Oregon; however, very little information is collected in any systematic way, on the use, storage or disposal of PCB. The chemical has been generally exempted or overlooked in most reporting requirements, such as, the Toxic Release Inventory, Oregon's Fire Marshal's Hazardous Substance Survey and Oregon's hazardous waste reporting requirements. In 1991, EPA has began collecting data on amounts of PCB stored and disposed. This information is only available on a regional basis.

Since it has not been possible to obtain a clear picture of the use and management of PCB it is not clear whether the State of Oregon should implement its own PCB program to supplement EPA's. There are many other options available to DEQ beside implementing a full program, such as incorporating PCB oversight, under current authorities, into the hazardous waste program or seeking more information about the extent of PCB still in use.

2) The Department has clear statutory authority, found in ORS 466, to adopt regulations for PCB in use, PCB disposal and PCB treatment and disposal facilities. The relevant statutory language may be found in Attachment E. The EQC has adopted most of the federal TSCA rules regulating PCB with the major exception being the rules regulating PCB in use. The question of whether the EQC should adopt rules regulating PCB in use will be one of the recommendations coming out of the final report.

While interviewing DEQ staff regarding regulation of PCB it was found that most staff will refer any questions or problems to EPA. Few of those interviewed at the Department were aware of DEQ's statutory authority over PCB and most think that only EPA regulates PCB in Oregon. However, some Hazardous and Solid Waste staff have been involved with the regulation of PCB, and regional inspectors have responded to PCB spills; in 1992 DEQ successfully completed an enforcement action for illegal disposal of PCB. The issue of cleanup levels for PCB spills has recently surfaced as a concern for the utilities, and DEQ is presently reviewing this issue.

Several staff indicated that they frequently receive questions about the regulation of PCB. Currently, there is not a clear contact in DEQ to respond to these questions.

3) Defining PCB as a hazardous waste would receive strong opposition from utilities primarily if this meant that PCB would be regulated under federal RCRA. Fifteen states define PCB as a HW. Most states then refer to TSCA in their hazardous waste rules. The main effect of a hazardous waste definition, at the state level, has been requiring the manifesting of PCB waste; however, since 1989, TSCA has required that PCB waste be manifested regardless of state law.

Several states define PCB as a hazardous waste only in concentrations of less then 50 ppm. This avoids duplicate regulation since TSCA generally does not regulate PCB at less than 50 ppm. It appears that defining PCB as a hazardous waste primarily makes a statement that the state will regulate that chemical.

4) There is a need for more discussion with the regulated community and with EPA Region 10 before any changes to Oregon's PCB statutes or regulations are proposed.

IV. Summary

The final report on Oregon's PCB program is due to EPA in December 1993. The key issues the Department needs to resolve to complete the project are:

1) Should some kind of reporting of PCB be required? If so, for PCB "in use" or just for PCB disposal?

2) Should the Department seek resources from EPA or the 1995 Oregon legislature to enhance the PCB inspection/compliance program?

3) Should the Department regulate PCB "in use?"

4) Should PCB be regulated as a state-only hazardous waste for fee and reporting purposes only (all other regulations would be the same as TSCA)?

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List of Attachments

Attachment A	List of regulated community contacts
Attachment B	List of potentially regulated businesses
Attachment C	Background on PCB
Attachment D	Summary of TSCA Regulations
Attachment E	Key Oregon Statute Text
Attachment F	Summary of Utility Survey Results
Attachment G	Number of ECD sites contaminated with PCB compared to other chemicals
Attachment H	Levels of contamination of ECD sites
Attachment I	List of PCB incidences since 1990

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Attachment A

Regulated Community Contacts

Portland General Electric, Dennis Norton

Bonneville Power Administration, Greg Baesler & Steve Sander

Pacific Power and Light, Terry Lumapas

Chemical Waste Management of the N.W., Nancy Proctor & Steven Seed

Oregon People's Utility District Association, Diana White

Oregon Rural Electric Cooperative Association, Sara Baker-Sifford

Oregon Municipal Electric Utilities, Tom O'Conner

Columbia River PUD, George Taylor

Schnitzer Steel Industries, Inc., Tom Zelenka

List of Potentially Regulated Community (Industries likely to use or dispose of PCB or PCB contaminated material)	Number of Companies in Oregon [1]
Electric Utilities	40
Construction Contractors (electrical work and demolition)	650
Primary Metal Manufacturers	80
Secondary Metal Manufacturers	470
Wood and Paper Product Manufacturers	900
Transportation Equipment	230
Industrial Machinery & Equipment	690
Trucking and Warehousing	1,940
Water Transportation	130
Transportation by Air	140
Communication (e.g. radio and T.V. stations)	340
Gas and Sanitary Services (includes landfills)	150
Signs and Advertising Specialities	50
Metal and Oil Recylers	30
Commercial and Public Buildings, i.e. Office Bldg, Schools, Hospitals	NA
Total	5,930+

REGULATED PCB FACILITIES	Number
PCB Commercial Storers (GE and ChemWaste)	2
Storage for Disposal Facilities (SFD)	49
PCB Disposal Facilities (ChemWaste PCB Landfill)	1

[1] Source: Oregon Employment Division and Oregon DEQ Files

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Attachment C

Background on PCB

Health and Environmental Concerns

The effects of PCB on human health is under debate and EPA is in the process of reassessing the effects PCB's. It is known that PCBs are readily accumulated in the body of humans and animals. In humans, exposure to PCBs has been associated with chloracne, impairment of liver function, a variety of neurobehavioral symptoms, menstrual disorders and minor birth abnormalities. Experimental animals exposed to PCBs experience an increased incidence of cancer; reproductive problems; neurobehavioral degradation; pathological changes in the liver, stomach, skin, and other organs; and suppression of immunological function. PCB is of particular concern if it is heated to high temperatures, such as in a fire, because the PCBs released can be converted into materials which are considered more toxic than PCB. The resulting chemicals include dioxins and furans which are known carcinogens

PCBs are highly resistant to degradation, therefore, once they enter the environment they will likely remain for years. This resistance to degradation is a problem because it provides more opportunities for the chemical to enter the food chain. According to an EPA exposure assessment, "PCB's persistence and tendency to attach to organic material in soil and sediments can result in continuous low level exposure to surrounding areas." The greatest environmental concern is PCB contamination of water sources where PCB has the greatest opportunity to enter the food chain.

Uses of PCB

The industrial utility of PCBs was due to the compound being a dielectric as well as chemically and thermally stable. Commercial applications included use in electrical equipment(transformers, capacitors, electrical wires, bushings, circuit breakers, regulators) heat transfer and hydraulic fluids, inks, adhesives, surface coatings, sealants, plasticizers and carbonless copy paper. PCB may be found in large electrical equipment, such as transformers, but also in small equipment, such as television sets, microwave ovens, air conditioners and light ballasts which were manufactured prior to 1979. Use of PCB today is restricted to totally enclosed equipment and use of transformers and "large" capacitors is limited to locations where the risk of exposure to the public is low. The use and disposal of small capacitors (less then three pounds) are exempt from regulation.

Before 1970, 60 percent of PCB sales were for "closed" uses (electrical and heat transfer systems), while the remaining 40 percent were for "open" uses (examples being; hydraulic fluid, carbonless copy paper, plasticizers, lubricants and flame-resistant paints). PCB may be found and used unknowingly in products which fit the "open" use category, such as in oil which has been recycled due to contaminated oil from electrical equipment and PCB has been found recently in paints and pesticides either from a time when PCB was used in these products or due to contamination from oil.

Major Users of PCB

Any industry which uses large amounts of electricity is likely to own or have owned equipment which contains PCB. EPA estimated that 36% of transformers were controlled by the industrial sector while 27% were estimated to be controlled by utilities. Since PCB was widely used in both large and small electrical equipment, PCB may be found not only in large industries but also in small businesses and in households in the form of capacitors in light ballasts, in water pumps, white goods and occasionally in oil-filled electrical heaters. Attachment B contains a listing of most types of businesses for which PCB use is a possibility.

Bibliography

Estimating Exposure to Dioxin-Like Compounds, U.S. EPA, August 1992, EPA/600/6-88/005B.

"Sixth Annual Report on Carcinogens, Summary 1991", U.S. Department of Health and Human Services, Prepared by Technical Resources Inc., Contract Number NO1 ES 3 5025, pages 324-236.

PCB Inspectors Manual, U.S. EPA, November 1992.

"Polychorlinated Biphenyls (PCB), Proposed Rules for Manufacturing, Processing, Distribution in Commerce, and Use Bans," Federal Register, Vol. 43, NO. 110-Wednesday, June 7, 1978.

"Toxic Substances Information, PCB," Department of Social & Health Services, State of Washington. April 1986.

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Attachment D

Overview of TSCA Regulation of PCB

PCB Manufacturing and Use
Prohibits all manufacturing of PCB's after July 1, 1979
Distingishes regulations for PCB over 500 ppm, PCB from 50 to 499 ppm and less then 50 ppm. Generaly PCB in concentrations less then 50 ppm are not regulated
Prohibits processing, distribution in commerce, and use of PCB except in a totally enclosed manner
Prohibits the use of certain types of PCB Transformers in or near commercial buildings
Requires electrical protection on lower voltage network PCB Transformers in or near commercial buildings by Oct. 1, 1990 or removal by Oct. 1, 1993
Prohibits further installation of PCB Transformers in or near commercial buildings
Requires registration, by Dec. 1, 1985 of all PCB Transformers with fire response personnel and building owners.
Required the marking of the exterior of all PCB Transformer locations.
Allows certain equipment and materials that have been adequately decontaminated to be used and distributed in commerce.
Specifies cleanup levels for spills occurring after 1987
PCB Storage and Disposal
Exempts small capacitors (e.g. light ballasts) from regulation
Allows the use of waste oil containing <50 ppm as a fuel in certain combustion units
Requires EPA notification of PCB handling and manifesting of PCB waste
Requires commercial storers to obtain final approval from EPA
Specifies disposal requirements for PCB equipment, liquids and debris
Allows temporary storage for 30 days and storage for up to one year at facilities which meet "storage for disposal" requirements

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Attachment E

Key Statute Text

USE OF PCB

466.151 (1) PCB or an item, product or material containing PCB may be sold for use or used in this state if it is used in a closed system as a dielectric fluid for an electric transformer or capacitor pursusant to rules of the commission to insure the public health. However, upon adequate documentation of the availablity of reasonable substitutes which meet performance standards tand environmental acceptability, the commission after public hearing by rule may modify these exclusions in whole or in part by requiring the phasing in of the substitute or substitutes.

PCB DISPOSAL

466.255 (2) No person shall treat or dispose of any PCB anywhere in this state except at a disposal facility operating under a permit persuant to ORS 466.025 to 466.065, 466.250, 466.255 (2) and (3) and 466.260 to 466.350.

466.530 After October 4, 1977, a person shall not dispose of solid or liquid waste resulting from the use of PCB or an item product or material containing or which has contained a concentration equal to or greater than 100 ppm of PCB except in conformity with rules of the commission adopted pursuant to ORS 466.005 to 466.385 and 466.890.

PCB DISPOSAL FACILITIES

466.260 Duties of the Department (1)(a) To regualte the operation and construction of a PCB disposal facility; and (b) For the permitting of a PCB disposal facility in consultation with the appropriate county governeming body or city council.

466.325 An annual fee may be required of every PCB disposal facility permittee under ORS 466.025 to 466.065, 466.250, 466.255 (2) and (3) and 466.260 to 466.350. The fee shall be in an amount determined by the commission to be adequate to carry on the monitoring, inspection and surveillance program established under ORS 466.310.

ENFORCEMENT

466.880 Civil penalties generally. (1) In adddition to any other penalty provided by law, any person who violates ORS 466.005 to 466.385, a license condition or any commission rule or order pertaining to the generation, treatment, disposal or transportation by air or water of hazardous waste, as define by ORS 466.005, shall incur a civil penalty not to exceed $10,000 for each day of the violation.

DEFINITIONS

466.250 Definition of "PCB disposal facility." as used in ORS 466.250, 466.255 (2) and (3) and 466.260 to 466.350, "PCB disposal facility" includes a facility for the treatment or disposal of PCB.

DEPARTMENT OF ENVIRONMENTAL QUALITY

DRAFT

Attachment F

PCB Survey Results

12-May-93

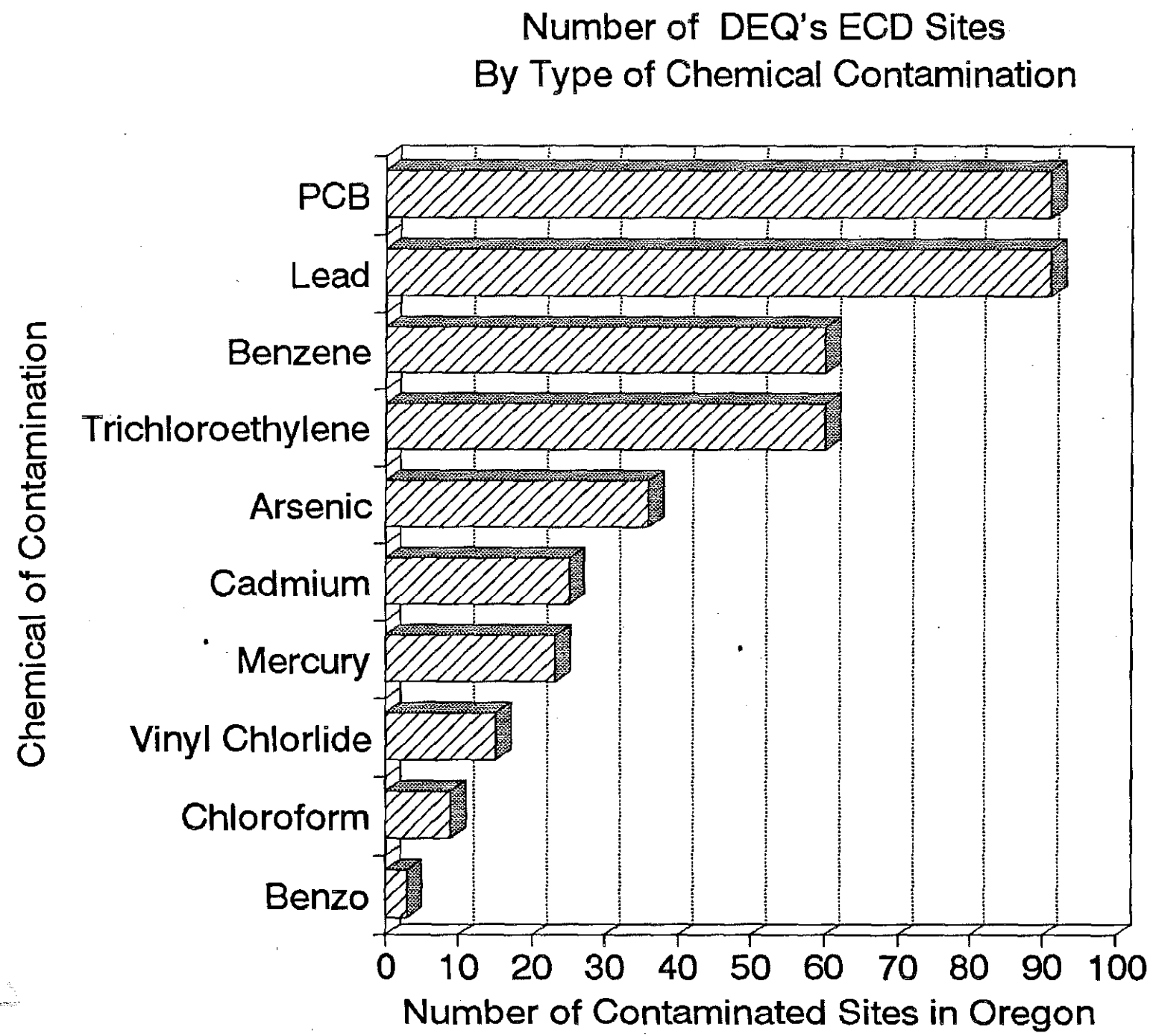
PCB EQUIPMENT-IN SERVICE (1991)								
UTILITIES	(>500ppm) LARGE CAPACITORS (Units)	(lbs.)	(>500ppm) TRANSFORMERS (Units)	(lbs.)	(>500ppm) OTHER EQUIP. (Units)	(lbs.)	(49-499ppm) CONTAMINATED EQUIP. (Units)	(lbs.)
COOPERATIV	0	0	7	879	0	0	349	248,163
PUDS	0	0	102	352	0	0	726	55,499
MUNICIPAL	0	0	0	0	2	1,027	846	739,079
PGE	13,037	860,442 *	1,500 *	132,000 *	NA	NA	6,000 *	528,000 *
PP&L	5,249	346,434 *	1,500 *	132,000 *	NA	NA	6,000 *	528,000 *
BPA	48,394	4,258,672 *	135 *	10,498 *	NA	NA	NA *	NA *
TOTAL	66,680	5,465,548	3,244	275,729	2	1,027	13,921	2,098,741

NOTE: PGE has scheduled the removal of 3,000 capacitors for August 1993

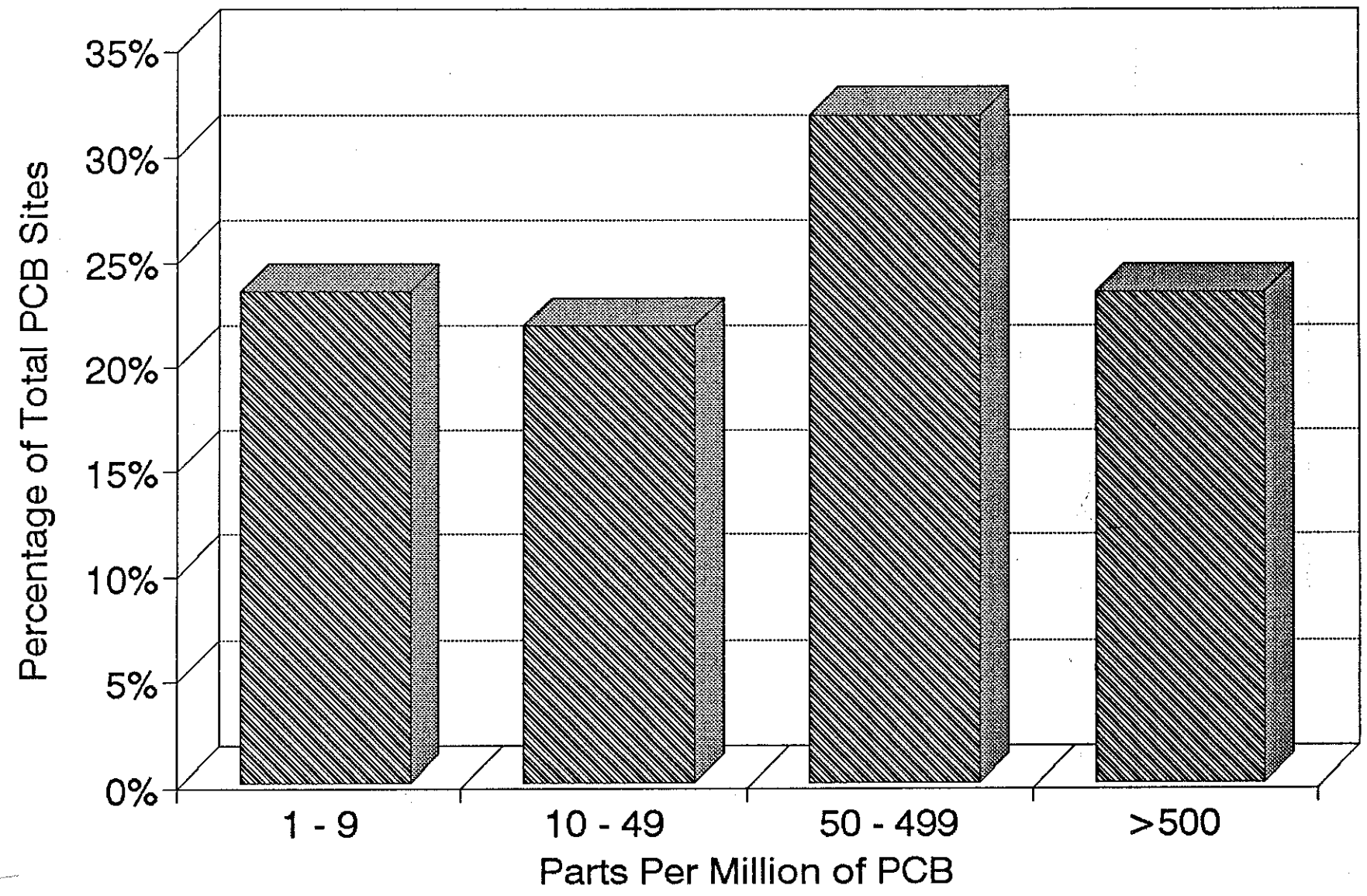
* Indicates the value is an estimate. Estimates were developed by DEQ with the assistance of each utility. The methodology used to arrive at the estimates is available.

Source: Oregon DEQ, ECD Site Database, November 24, 1992

Attachment G



Oregon ECD Sites with PCBs
By Levels of Contamination



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Attachment I

Is PCB Still A Problem In The 1990's?

Below is a list of examples of PCB spills, contamination and violations in Oregon which occurred or were discovered since January 1, 1990. The purpose of presenting these incidences together is to show that PCB is still being used and is still entering the environment even 14 years after the manufacturing of the chemical was banned.

- 1990 - Erickson Hardwood Company. DEQ inspectors discovered PCB's leaking from capacitors onsite. Lab results showed soil contaminated up to 200,000 ppm. Potential for release of contaminants into nearby river, which is 100 yards away.

- 1990 - Oregon Steel Mills. The company was fined over $250,000 by EPA. In order to receive a less restrictive penalty the company agreed to pay early disposal costs and removed all of the companies PCB transformers, thus decreasing the fine to $143,000.

- 1990 - Safeway Inc. A PCB capacitor owned by Safeway Inc. caught fire at one of its distribution centers in Clackamas County. Safeway was fined $100,000 for noncompliance with spill cleanup requirements.

- 1990 - Gunderson Inc. A penalty of $289,000 for PCB violations was proposed for a manufacturer of stackable rail cars located in Portland.

- 1990 - Oregon Division of State Lands, Tongue Point, Astoria. The State received a penalty of $22,000 for abandoned and leaking PCB transformers which were left on land purchased from the federal government.

- 1990 - Precision Castparts. A high level PCB capacitor exploded on May 2, 1990.

- 1991 - Solly's Salvage. PCB transformer oil was disposed directly to the soil and waste oil was burned onsite.

- 1991 - Bald Knob Mill. A fire caused the ceramic bushings on transformers to shatter and highly concentrated PCB's flowed out. Further contamination was believed to have occurred when fire-fighters used high-pressure hoses and spread the PCB material.

- 1991 - Gold Beach Plywood. Abandoned mill burned down. Samples of oil from PCB transformers onsite found PCB levels as high as 910,000 ppm per sample and 130,000 ppm PCB was found in the soil. Potential threat to surface water.

- 1991 - Valley Pump. High levels of PCB contamination was found which resulted from a copper salvaging operation. The source of PCB was from capacitors in submersible pumps. DEQ collected $6,000 in civil penalties. PCB sample taken produced PCB at concentrations as high as 43,000 ppm.

- 1991 - Port of Portland. The Port was assessed a $65,000 penalty in 1991 for PCB violations. At the time of the inspection the Port owned 19 PCB transformers at the Portland Airport Terminal.

- 1991 - U.S. Department of Interior, Bureau of Mines. Leaking PCB transformers and capacitors were found. If the facility had not been a federal, the penalty would have been $79,000.

- 1991 - Harris Pine Mill. At the time of inspection this mill, located in Pendleton, was partially demolished and equipment had been auctioned. PCB samples taken at the site produces level of 21,000 ppm and 41,000 ppm. There were also 24 PCB capacitors which had been abandoned.

- 1992 - Laverne Jacobs and Betty White. 14 sites were discovered, in the Portland area where a metal salvage operation had illegally burned electrical components, releasing high level PCBs into the air and soil. The electrical equipment was primarily small capacitors from light ballasts.

- 1992 - Chemical Waste Management, Inc. In a letter dated October 1, 1992, Chemical Waste Management reports frequently finding PCB, ranging from low levels to levels containing greater than 500 ppm, in household hazardous waste. The sources of PCB are liquids which may include paint, pesticides, motor oil, varnishes and solvents.

- 1992 - Throwaway Bit Corporation. This business had a high level PCB spill from a capacitor. An employee reported the spill was not cleaned up for four days. This claim could not be verified.

- 1992 - PGE. The clean-up of 12 gallons of PCB transformer oil went into a non-water tight dumpster.

- 1992 - Isley Welding. Leaking drums with PCB oil were found in July 1992. The leaking oil was approaching a storm drain.

- 1993 - plywood mill. An environmental consultant discovered high level PCB contamination (365,000 ppm) found at a plywood mill in Portland. Case is still under investigation by EPA.

- 1993 - municipal airport. A state OSHA inspector, who had been trained to look out for PCB violations, found "assumed to be" PCB transformers, at a municipal airport, which were being stored in violation of TSCA regulations. Case is still under investigation by EPA.

- 1993 - PGE. A spill of high level PCB from a capacitor was discovered by a DEQ inspector at a PGE substation while he was checking into a 6,250 gallon oil spill with low level PCB contamination.

- 1993 - Source unknown. 14 high level PCB capacitors had been dumped in a lot near Edgewater Country Club. DEQ discovered the site and conducted the cleanup at a cost of $8,000.

State of Oregon
Department of Environmental Quality Memorandum

Date: June 1, 1993

To: Environmental Quality Commission

From: Fred Hansen

Subject: Agenda Item H, June 10 meeting
Work Session: Recycling (Part 2)

This is the second session of a two session series on Recycling. The purpose of this work session is to provide a status update on the State Solid Waste Management Plan and to present local perspectives on local solid waste management planning, recycling and illegal dumping.

Staff will give the statewide plan update and a panel of solid waste professionals from around the state have been invited to speak on local issues.

I. State Solid Waste Management Plan

Adoption of a statewide plan by the Commission is required by January 1, 1994. The status update will provide information on the legislative requirements, how they are being fulfilled, the process being used to develop the plan and the plan goals.

II. Local Perspectives

Sarolta Sperry Prairie City	Recycling in rural Oregon
Robert Trachtenberg Multnomah County	Recent developments in illegal dumping
Pamela Kambur Lincoln County	County-wide solid waste planning
Sue Densmore Rogue Disposal, Medford	Inter-County solid waste planning

FH:pv

State of Oregon
Department of Environmental Quality Memorandum†

Date: June 9, 1993

To: Environmental Quality Commission

From: Fred Hansen, Director

Subject: Agenda Item J, June 10, 1993 EQC Meeting

Pope & Talbot-Halsey, NPDES Permit Renewal

Statement of Purpose

The current NPDES Permit for the Halsey pulp mill expired on December 31, 1992. During the permit renewal process the Department received over 250 comments from state and local elected officials, municipalities, private industries, environmental groups, and the general public. Many of the comments recommended denial of the permit renewal. Others were in full support of the draft permit without modifications. There were also recommendations for permit issuance with specified modifications. The meetings, hearings, testimony, and written comments indicated that the permit renewal is controversial among many citizens and groups. The Environmental Quality Commission has requested a status report on permit issuance. This report summarizes the issues raised in the public review process and how the Department proposes to respond to those issues.

Background

The Pope & Talbot mill in Halsey, OR is a bleached-kraft pulp mill that produces 400-600 tons of air dried pulp per day. Wastewater generated during the manufacturing process is treated and discharged to the Willamette River at river mile 147.2. Pope & Talbot was last issued a National Pollutant Discharge Elimination System (NPDES) permit on December 28, 1987, and the permit expired on December 31, 1992. Application for permit renewal was made by Pope & Talbot on July 14, 1992.

During the public notice period for the Pope & Talbot permit renewal two informational meetings were held, as well as two formal hearings. 50 people provided testimony

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

during the hearings and over 200 written comments were received. A staff report is attached that addresses all of the comments received by the Department. The issues of major importance and concern are summarized below:

Effluent Characteristics

There is a great deal of concern regarding the color and odor of the discharge. Odor problems have not been documented by the Department but the effluent is noticeable during low river flow due to the color. The Department and Pope & Talbot are nearing agreement on how this issue will be addressed. A full explanation of the issue is provided in the following sections of the staff report: Page 2, Item 3; Page 6, Item 7; Page 12, Item 16; Page 13, Item 17.

Plant Expansion

Many of the comments stated that the total suspended solids limits were set too high and that the mill could expand and increase loading to the river without the review or approval of the Department. The Department agrees in part with this concept and the limits were adjusted downward. A full explanation is provided in the following sections of the staff report: Page 3, Item 4; Page 4, Item 5; Page 15, Item 21.

Drinking Water Potability

Pope & Talbot discharges treated wastewater to the Willamette River at river mile 147.2. The City of Corvallis withdraws water from the Willamette for drinking water at river mile 134. The City of Corvallis and the users of the drinking water system are very concerned about the quality of their drinking water. Since the Health Division and the Department have not yet determined whether or not Pope & Talbot interferes with the drinking water potability of the Willamette River, the issue has been addressed in the proposed draft permit. A study is being required in the proposed permit to assist the Department and Health Division in determining whether this beneficial use is being impacted. A full explanation is provided in the following sections of the staff report: Page 2, Item 2; Page 2, Item 3; Page 9, Item 10; Page 15, Item 20; Page 16, Item 22.

Oregon Administrative Rules, Chapter 340

During the informational meetings and the formal hearings there was a great deal of concern raised regarding the way OAR-340 sets different discharge limits for

municipal versus industrial facilities. The general feeling was that both are discharged to the same river and that it is unfair to treat them differently.

There was concern that the OAR Water Quality Standards were not adequate with regard to color, odor, and nuisance or aesthetic impacts. It was recommended that specific measurable standards be adopted for these parameters.

The Department position regarding the above issues is that they are beyond the scope of this individual permit action. However, they may be appropriate to address in a broader context in a rule making process. The Hearings Officer Report regarding these issues is attached.

Authority of the Commission with Respect to the Issues

The issues regarding the current language contained in OAR-340 regarding how effluent limits are set, and the adequacy of the current water quality standards for color, odor, and nuisance conditions are likely to surface again. It is important that the Commission be aware of these issues.

Alternatives and Evaluation

To better address the issues of municipal versus industrial effluent limits and the current language in OAR-340 regarding color, odor, and nuisance conditions, OAR could be modified. Modifications could be made to include a more equitable approach in setting effluent limits and quantitative standards for color, odor, and nuisance conditions.

Summary of Public Input Opportunity

During the public participation process over 300 oral and written comments were received by the Department. Due to the number of individuals providing comments the Department read each comment and generated a list of common issues. These issues were summarized in the hearings officer report and are addressed in the attached staff report.

Conclusions

The attached staff report summarizes each issue, the Department position/response, and the intended action or change.

Intended Future Actions

The Department intends to issue an NPDES permit to Pope & Talbot for a period of five years.

Department Recommendation

It is recommended that the Commission accept this report, discuss the matter, and provide advice and guidance to the Department as appropriate.

Attachments

Staff Report, Pope & Talbot NPDES Permit Renewal Issues and Final Permit Actions, June 8, 1993.

Hearings Officer Report, Pope & Talbot NPDES Permit Renewal Public Hearings, Corvallis and Albany, April 13, 1993.

Environmental Quality Commission Meeting Minutes, July 17, 1987 (pertinent sections only).

Approved:

Section: Tim McFetridge by mso

Division: Michael Downs

Report Prepared By: Timothy C. McFetridge

Phone: 378-8240

Date Prepared: June 9, 1993

TCM
Pope & Talbot/File No. 36335
June 9, 1993

State of Oregon
Department of Environmental Quality Memorandum

Date: June 8, 1993

To: Mike Downs, WQ Administrator

From: Timothy C. McFetridge/Gary Andes, WVR

Subject: Pope & Talbot NPDES Permit Renewal Issues and Final Permit Actions

Application No. 997246

The following staff report has been compiled in an effort to address the issues raised during the public participation process for the renewal of the above referenced NPDES permit. Pope & Talbot, Inc. operates a bleached-kraft pulp mill in Halsey, OR and discharges treated process wastewater to the Willamette River at river mile 147.2 per the requirements of NPDES permit No. OR0001074. The current permit expired on December 31, 1992 and application was made with the Department for permit renewal.

During the public participation process over 300 oral and written comments were received by the Department. Due to the number of individuals providing comments, the Department read each comment and generated a list of common issues. These issues were summarized in the hearings officer report and are restated here in the same order. Following the issue statement is the Department position/response to the issue. If the issue resulted in a change in the proposed draft permit or any other action, the change or action is described in detail. If the issue did not result in any change or action a statement of NO MODIFICATIONS PROPOSED will appear. A list of acronyms and their meaning is attached to this report.

General Issues/Views

1. Before final action is taken, this proposed permit action should be reviewed by the Oregon Environmental Quality Commission (EQC) to ensure DEQ has addressed all environmental and public health concerns.

   Department position/response:

   The hearings officer report and staff report regarding the proposed permit renewal will be provided to the EQC for their information on June 10, 1993. If a mass load increase was being proposed as part of this permit renewal the draft permit would automatically require EQC approval before issuance. However, the Pope & Talbot permit does not

involve a mass load increase and therefore EQC action is not mandatory.

Action or change:

If the EQC determines that their involvement is necessary, they retain the option to make a final review and approval over any permit action. The Department has not received any indication from the EQC that this permit action will need their review and approval. Therefore, the Department will proceed with the final permit action until directed by the EQC to do otherwise.

2. This permit action should be delayed until the Willamette River Basin Study is completed and EPA's new Drinking Water Standards are adopted so more complete data will be available to base permit limits and conditions upon.

Department position/response:

Pope & Talbot has satisfied all federal and state requirements for application regarding the renewal of their current NPDES permit. The current policy of the Department is to issue NPDES permits for five year periods. Per OAR 340-45-055 the Department may modify any NPDES permit if circumstances change or new information becomes available. After Department review of the current Willamette River Study, EPA's new Drinking Water Standards, or any other pertinent information or data, the permit can be reevaluated and all limits, schedules, and conditions modified in accordance with the new information to determine if permit modifications are warranted.

Action or change:

Issue the permit for five years and follow standard Department review of all current information available regarding the Pope & Talbot facility.

Schedule A, Waste Discharge Limitation Issues/Views:

3. The overall limitations of Schedule A do not provide limits that are protective of general water quality, aquatic life, recognized beneficial uses associated with recreation and aesthetic values, nor do they provide adequate safeguards to the City of Corvallis' drinking water supply in regards to odor, taste, and THM formation potential.

Department position/response:

Past studies conducted by the City of Corvallis, Pope & Talbot, and the current Willamette River Study, indicate that with the possible exception of color, water quality standards are not being violated outside the defined mixing zone. The color of the discharge may be a violation of water quality standards and is addressed specifically in Items 7, 16, and 17. Concern for the safety and treatability of the Willamette River water for drinking water purposes in the City of Corvallis and the Village of Adair are recognized by the Department and are addressed specifically in Items 2, 4, 10, 20, and 22.

Action or change:

Schedule A of the draft permit was modified to lower the monthly average and daily maximum TSS limits during the summer months. Those issues where insufficient data existed to make a determination have been addressed in revised Schedules C and D of the permit requiring Pope & Talbot to conduct additional studies to address the issues associated with drinking water and other beneficial uses.

4. Based on the current production levels, past monitoring data, river flow conditions, and the removal of the James River Paper wastewaters from the Pope & Talbot wastewater system, the proposed BOD and TSS limits should be significantly reduced, different BOD and TSS discharge load limits established for winter and summer periods, and the summer period be redefined to be from May 1 through October 31.

Department position/response:

The Department agrees that some changes are warranted due to the issues raised. The EQC approval of a mass load increase for the James River recycle mill did result in a decrease in the BOD loading to the Pope & Talbot ASB. However, the fact that the EQC granted a mass load increase to James River does not automatically require a mass load decrease for Pope & Talbot. If the Willamette River was determined to be a water quality limited stream a waste load allocation study would be performed and reductions in mass loads would be expected. The section of the Willamette River near the Pope & Talbot outfall has not been determined to be water quality limited.

Review of historical operating efficiencies of the wastewater treatment system supports the position that the

current waste load allowances for TSS are not necessary for current production capabilities or to accommodate future production efficiencies. Accordingly, the Department agrees that a modification in TSS limits is warranted.

The Department also agrees that the period defined as the summer months should include May and that different load allowances should be established between winter and summer periods in recognition of streamflow mixing.

Action or change:

Different limits have been assigned for TSS during the summer months. The summer limits for TSS were reduced from the 7000 lb/day monthly average and 10,500 lb/day daily maximum as described below:

Period	Parameter	Monthly Ave lb/day	Daily Max lb/day
May-Oct	TSS	5000	10,000
	BOD	2500	3700
Nov-Apr	TSS	7000	10,500
	BOD	4000	5000

5. BOD and TSS load limits should be established based upon the current loads actually being discharged as that is representative of the current mill's production of 550 ADMT/Day of pulp production and is accommodative of current needs. If mill efficiencies allow for expanded pulp productions without expansion of existing facilities, these increased productions must still be accommodated within the established BOD and TSS loads that are actually being discharged at this time.

Department position/response:

This issue is related to Issue Number Four above. Limits for BOD, TSS, and plant expansion are involved. A summary of the federal guidelines, current permit limits, and the revised limits is given below for BOD and TSS:

a) Federal Guidelines:

	Monthly Average lb/day	Daily Max lb/day

BOD_5 (BPT)	8,900	17,000
TSS (BPT)	18,000	34,000

b) Current Permit:

	Monthly Average lb/day	Daily Max lb/day
BOD_5		
June 1 - October 31	2500	3700
November 1 - May 31	4000	5000
TSS	7000	10,500

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c) Proposed Permit:

Period Parameter	Monthly Average lb/day	Daily Max lb/day
BOD_5		
May 1 - October 31	2500	3700
November 1 - April 30	4000	5000
TSS		
May 1 - October 31	5000	10,000
November 1 - April 30	7000	10,500

The limits given in the federal guidelines are representative of what effluent limits this type of industry should be expected to meet. When the Pope & Talbot mill went on line in 1969 the federal limits were yet to be developed, so the State of Oregon assigned limits based on Best Professional Judgement (BPJ). When the federal limits were established, no change was made to the Pope & Talbot limits. The limits were thought to be protective of water quality and increases (an increase was requested by P&T on July 17, 1987) were denied by the Department. Even though the current discharge meets federal guidelines and state Water Quality Standards, the proposed limits as described in Item Number Four above were developed in response to the capabilities of the Pope & Talbot treatment system and the Department's mission to provide for enhancement of water quality whenever practicable.

For those industries that discharge wastewater by authority of NPDES permits, federal and state regulations/rules do not place limits on the amount of a given product that can be produced by those industries. If new technology becomes

available, or an industry finds ways to become more efficient and stay within the given effluent limits, the Department allows increases in production, provided these can be accommodated without other environmental impacts.

Action or change:

See Response Number Four and the listing above for changes which have made to the TSS limits.

6. pH limits in the permit should be consistent to match the Willamette Basin Standard of 6.5 to 8.5 range specified in OAR's.

Department position/response:

The discharge of treated wastewater from the Pope & Talbot mill to the Willamette River has been assigned a mixing zone by the Department. The mixing zone is defined as that portion of the Willamette River extending 300 feet down stream from the outfall diffuser and 30 feet from each edge of the diffuser. The Department has determined that the water quality standard for pH in the Willamette Basin of 6.5 to 8.5 is met at the edge of the mixing zone when the end-of-pipe discharge has a pH of 6.0 to 9.0.

Action or change:

NO MODIFICATION PROPOSED

7. The proposed color limit in the permit is not adequate to prevent aesthetic or nuisance conditions in violation of Willamette Basin Standards. A specific color limitation is needed so that the color at the end of the mixing zone does not exceed 5 color units more than that of the river immediately upstream of the discharge into the river.

Department position/response:

The Department recognizes that considerable testimony and written comments were received regarding the color of the Pope & Talbot discharge to the Willamette River at the outfall location and downstream. Prior to July 17, 1987, Pope & Talbot was required to meet an effluent limit for color. The limit was set at 1500 CU for a monthly average and 2200 CU for the daily maximum. The mill achieved this limit by the addition of as much as 60,000 gallons/day of sodium hypochlorite. Very few complaints were received by

the Department or Pope & Talbot when this practice was performed.

On July 17, 1987, the EQC met to hear testimony regarding Pope & Talbot's request to have the BOD load limit increased and the limit for color removed from the current NPDES permit. The Department recommendations to the EQC were: maintain the existing BOD limitations for the summer period, allow increased discharges of BOD during the winter if the Department determined there was a demonstrated need, and identify the need to determine what assimilative capacity exists in the Willamette River so that criteria could be proposed for allocating any reserve capacity. Regarding removal of the color limit, the Department recommended that the request for removal of the color limit be denied, that the current limit be maintained during the summer, and that color limits be eliminated during the period of November through April. The action of the EQC was the following:

> Action: It was MOVED by Commissioner Buist, seconded by Commissioner Bishop and passed unanimously to authorize the Department to eliminate the color limit from the Pope & Talbot permit.
>
> It was further MOVED by Commissioner Bishop, seconded by Commissioner Buist, and passed unanimously to approve sections 1.a and 1.c of the Director's Recommendation. (Sections 1.b, 2.a and 2.b of the Directors Recommendation were not approved.)
>
> Note: The minutes of the pertinent EQC testimony and actions are included in the Appendix.

The EQC took the above actions and the Department subsequently removed the color limit from the Pope & Talbot NDPES permit. The EQC action was based on the concern that chlorinated organics may be being formed as a result of the color bleaching practice. The EQC and the Department were aware of the fact that the color of the effluent would increase when the practice of bleaching was discontinued. Given the choice between some effluent color versus chlorinated organics, allowing some discoloration of the river was thought to be the best decision. The result of this action was an increase in the effluent color from 1300-1500 C.U. to 3000-4000 C.U..

Action or change:

Due to the number of comments received regarding the color

of the Pope & Talbot effluent, the Department feels that color is an issue that must be addressed even though the EQC's decision resulted in the removal of the color limit by its action in July, 1987. The Department has interpreted the public concern for the appearance of the river as a potential violation of OAR 340-41-445(2)(k)-(l). The Department and Pope & Talbot are nearing agreement on how this issue will be addressed.

The installation of oxygen delignification equipment at the mill will result in the reduction of color in the effluent discharged to the river to approximately 1500 color units. Based on the lack of public complaints about color when Pope & Talbot's effluent was at this color level, the Department thinks the aesthetic standard for color will be met when the oxygen delignification equipment is installed and operational.

8. The proposed TCDD limits in the permit are based on an annual average discharge of 0.3 mg/day into the river and do not take into account the low river flow conditions that occur during the summer months. Accordingly, TCDD limits should be based upon river flow conditions and lowered during the summer periods.

Department position/response:

The Waste Load Allocation (WLA) for TCDD was not designed to be achieved at the minimum river flow (7Q10). The WLA was calculated to achieve a stochaistic probability of being achieved using the harmonic mean flow. The harmonic mean was used, under EPA guidance, to best represent long term exposure. The risk of human health was considered to be best related to long term exposure rather than the short term low flows which the 7Q10 represents.

Action or change:

NO MODIFICATIONS PROPOSED

9. The proposed permit should establish a specific AOX limitation.

Department position/response:

The Department considers the compliance schedule approved by the EQC for meeting the AOX limit given in Order on Consent No. WQ-WVR-90-246 signed by the Department and Pope & Talbot on December 18, 1991 as equivalent to a limit for AOX. AOX

limits that can be modified as new information becomes available are included in the revised permit. This inclusion of a limit that can be periodically modified is based on the Department's acknowledgement that a correlation between 2,3,7,8-TCDD and AOX must first be determined by actual data. A final AOX limit has also been established in Schedule C, Condition 3.d. to achieve a limit of 1.5 kg AOX per air-dried metric ton of pulp produced by no later than December 31, 1997.

Action or change:

NO MODIFICATION PROPOSED

10. The proposed permit should establish a specific THM formation potential limitation.

Department position/response:

Effluent limits for THMFP have not been included in any municipal or industrial wastewater discharge permits issued by the Department to date. Sources of THMFP include agricultural runoff, urban storm water, natural erosion, industrial wastewater, and municipal wastewater discharges. The addition, or potential addition, of THMFP to the Willamette River due to the Pope & Talbot discharge is not known at this time. The concern of the City of Corvallis and its residents regarding the safety of their drinking water is recognized by the Department and the Department feels that further research regarding this matter is warranted.

Action or change:

The Department has added a requirement in the final permit for Pope & Talbot to develop an AOX/THMFP/TOC/UV-254 Correlation Study plan for approval by the Department. Upon approval of the plan, the study will be initiated by Pope & Talbot. The results of the study will be reviewed by the Department and used in an effort to determine whether a correlation between AOX, THMFP, TOC, and UV-254 exists and, if so, to what degree.

The AOX/THMFP/TOC/UV-254 Study plan and the data generated by the study will be reviewed by the DEQ and the State Health Division. Approval of the plan by DEQ will be based in part on the recommendations of the State Health Division. The data generated as a result of the study will be forwarded to the State Health Division for review and

comment.

Schedule B - Minimum Monitoring and Reporting Requirement Issues/Views

11. The proposed permit should require routine flow meter calibration and checks to ensure accurate flow data is being reported.

Department position/responses:

The Department agrees that the current equipment used by Pope & Talbot to measure discharge flow rates needs to be calibrated and the data output confirmed.

Action or change:

A Compliance Condition has been added to Schedule C of the final permit to require Pope & Talbot to calibrate the outfall 001 magnetic flow meter at least once per year. The first year calibration (10/93) will require testing of the device by the manufacturer. During the manufacturer test Pope & Talbot will also conduct a water balance test of the mill flows and the treatment system in an effort to determine what the flow should be at the outfall 001 flow monitoring location. If the manufacturer test results are within 10% of the plant water balance results, as determined by the Department, the once per year testing will be limited to the in-plant water balance method of flow calibration. All future calibration checks will be performed in September of each year.

12. The permit should require effluent monitoring for NH3-N, N03 & N02-N, TKN, and Total Phosphorus during the summer discharge periods.

Department position/response:

Currently, the operation of the treatment system at the Pope & Talbot facility does not include the addition of nutrients to aid in the biological activity within the ASB. Nutrients have been added to the ASB in the past and the concern for nuisance algal growth in the river downstream of the outfall is recognized by the Department. The Department agrees that additional monitoring for nutrients is warranted.

Action or change:

Additional monitoring requirements have been added to Schedule B for ammonia-nitrogen, nitrite-nitrate-nitrogen, and total kjeldahl nitrogen. The frequency of monitoring for all nitrogen parameters is set at twice per month for the summer months of May through October to complement similar monitoring requirements for total phosphorus.

13. The permit should require at least quarterly bioassay studies with one or more conducted during the summer low river flow periods.

Department position/response:

The current monitoring requirements for Pope & Talbot for bioassays is two acute and two chronic tests per year. A review of the Pope & Talbot bioassay results by the DEQ laboratory indicated that the Pope & Talbot effluent was not acutely toxic and showed relatively low chronic toxicity for Ceriodaphnia dubia (water flea) or Pimephales promelas (fathead minnow). An increase in monitoring frequency for a given parameter is usually prompted by analytical results that indicate possible water quality standards violations. This is not the case with the Pope & Talbot effluent. In addition to the biomonitoring conducted by Pope & Talbot the adjacent James River Corporation also is required to conduct bioassays of their effluent and the combined P&T/JR discharge. They are required to sample six times per year for the first two years of their permit. The Department feels that given the current biomonitoring of the Pope & Talbot effluent, the James River effluent, and the combined discharge, an increase in the frequency for biomonitoring is not warranted.

The Department agrees that the sampling for the bioassays should be conducted during the low river flow period.

Action or change:

No modification to the biomonitoring sampling frequency has been made. However, a requirement has been added to Schedule B, Monitoring and Reporting Requirements, that requires samples for bioassays to be taken in July and September.

14. The permit should require expanded monitoring of the sludge generated by the wastewater control facilities to include Total Solids, Volatile Solids, metals, pH, Nitrogen species, Potassium, Phosphorus, TCDD and TCDF, amounts and locations

of sludges applied.

Department position/response:

The Department agrees that industrial sludge monitoring should be expanded. The Department currently has draft guidelines for the land application of industrial sludges, but no rules or regulations exist at this time. Upon promulgation of federal or state regulations/guidelines, these requirements will be incorporated into all appropriate industrial NPDES permits. Until then, the state draft guidelines will be used.

Action or change:

A requirement has been added to Schedule C, Compliance Conditions and Schedules, that requires Pope & Talbot to submit a Sludge Management Plan to the Department for approval by August 31, 1993. The plan shall address the storage, disposal, and land application of the primary clarifier sludge and the ASB sludge. Note: the sanitary sewage plant sludges are addressed in Issue Number 19 below.

15. The permit should require weekly monitoring of chloroform.

Department position/response:

Due to the fact that the wastewater treatment system at the Pope & Talbot mill includes nearly 60 acres of ASB with a resulting detention time of 12-15 days, the discharge flow rate is relatively constant over time. This results in a very consistent flow rate to the Willamette River. The Department feels that given this fact, two samples per month for chloroform are adequate to provide the data necessary.

Action or change:

NO MODIFICATIONS PROPOSED

Schedule C, Compliance Conditions and Schedules Issues/Views:

16. The permit should establish a compliance date for Pope & Talbot to conduct a study on alternatives for additional color and odor removal, above and beyond the improvements projected by the new oxygen delignification process. The permit should further establish a specific compliance date to have the best alternative and facilities for color and odor reduction in operation.

Department position/response:

The Department feels that it is premature to require or evaluate treatment alternatives for color until enough baseline data has been compiled regarding the actual reductions in color as a result of the installation of oxygen delignification equipment. After the baseline data generated as a result of the Color Reduction Monitoring Program has been evaluated by the Department and actual reductions in color documented, additional color reduction alternatives may or may not need to be evaluated. Without the baseline data, it would not only be difficult to evaluate treatment alternatives, but the results could be useless due to the fact that the evaluation was conducted using assumed conditions and not actual data.

Regarding odors, the results of the current Willamette River Study should provide some information on the creation of dissolved gases and anaerobic conditions downstream of the Pope & Talbot outfall. This information will be helpful to evaluate and explain the varying odor complaints received by the Department from river users and land owners. The Department will continue to respond to odor complaints and investigate them in an effort to explain their source and resolve the situation if possible.

Action or change:

NO MODIFICATIONS PROPOSED

17. The permit should establish a compliance date upon which Pope & Talbot must have achieved control of color impacts from their discharge so that the color at the mixing zone boundary will not be more than 5 color units greater than the river water immediately upstream of the discharge point.

Department position/response:

The Department is discussing with Pope & Talbot the feasibility of assigning a compliance date and numeric value for color in the permit. OAR 340-41-445(2)(k)-(l) provides a narrative water quality standard for color, a specific value does not exist and compliance must be evaluated on a case by case basis. When bleaching of the effluent with sodium hypochlorite was standard practice, few complaints were received by the Department. The question that DEQ is faced with is: How do we address the issue of color in the Willamette River from the Pope & Talbot discharge given that the prior EQC action allows it?

Action or change:

The Department is working with Pope & Talbot to address the issue of aesthetics.

18. The permit should establish a compliance date upon which Pope & Talbot must submit a comprehensive evaluation of treatment and disposal alternatives beyond their current aerated lagoon technology that would significantly reduce or eliminate current loads and/or discharges to the river.

Department position/response:

The Department issues NPDES permits in accordance with federal and state regulations, rules, and guidelines. Based upon this the Department has no technical grounds upon which to support this issue. Although the Department feels that additional data is required to assure that all water quality standards are being met, there is currently no conclusive evidence that the Pope & Talbot wastewater treatment system would require modification to meet these standards. All information gathered during the various studies (some of which are not required by this permit) will be evaluated by the Department and other appropriate agencies, and the permit reopened for modification if deemed necessary by the Department.

Action or change:

NO MODIFICATION PROPOSED

19. The permit should establish a compliance date upon which Pope & Talbot must submit a Sludge Management Plan for both their domestic and industrial wastewater sludges, prepared in a manner similar to that required of Municipal sewerage system permittees.

Department position/response:

The Department agrees that sludge management plans for both the domestic and industrial wastewater treatment facilities are needed. With regard to the domestic sludge, these will be regulated in accordance with OAR 340 Division 50. See Item No. 14 regarding industrial sludges.

Action or change:

A requirement has been added to Schedule C, Compliance Conditions and Schedules, for the submission of Sludge

Management Plans for both the domestic and industrial sludges to the Department for approval. Upon Department approval, the plans shall become a part of this permit and be initiated 60 days after approval by the Department.

20. The permit should establish a compliance date upon which Pope & Talbot must complete a study that will conclusively show if there is any correlation between their wastewater discharges of AOX and the creation of THM formation potentials.

Department position/response:

The Department agrees that a study aimed at determining the relationship, if any, between AOX and THMFP is warranted given the concern raised for the City of Corvallis and City of Adair Village's use of the Willamette River as their source of domestic water supply. As a result of the concern regarding this issue the State Health Division was contacted. The Health Division recommended including TOC and UV-254 as parameters of concern.

Action or change:

The final permit has included a requirement in Schedule C, Condition 3 that requires Pope & Talbot to submit an AOX/THMFP/TOC/UV-254 study plan to the Department for approval. Upon approval, the plan shall be initiated per the schedule contained within the plan.

Schedule D, Special Condition Issues/Views

21. The permit should specifically establish a production cap of 550 ADMT/Day of pulp on an annual average, and this level could not be exceeded for any reason without first obtaining a permit modification that would first require reopening of the public review and hearing process.

Department position/response:

As discussed in Item Number Five above, the Department does not regulate the amount of a given product that can be produced by an industry regulated under an NPDES permit. If new technology becomes available or an industry finds ways to become more efficient and stay within the given effluent limits, the Department allows increases in production, provided that these can be accommodated without other environmental impacts.

Action or change:

NO MODIFICATION PROPOSED

22. The permit should contain a reopener clause that mandates review and modification of permit limits in the event technical studies ongoing by either DEQ, or the joint studies in process between Pope & Talbot, James River and the City of Corvallis, show that either Pope & Talbot's discharge or the combined discharge of Pope & Talbot and James River is causing any deleterious impacts on the City of Corvallis' domestic water supply.

Department position/response:

The Department recognizes the concerns of the City of Corvallis and the users of the Corvallis and City of Adair Village drinking water systems regarding the perceived impacts of the Pope & Talbot discharge to the Willamette River. If information is provided by the State Human Resources Department, Health Division, Drinking Water Section, or if other information becomes available that indicates that the Pope & Talbot and/or James River discharges to the Willamette River are negatively impacting the drinking water potability of any downstream user of the river this would be a violation of OAR 340-41-445(2)(i). A violation of this nature would result in a Class I violation of the Department's rules and would be referred for formal enforcement action. This enforcement action would result in the issuance of a Notice of Permit Violation (NPV) and require the submission of a corrective action plan within five days of NPV issuance. Such a plan may or may not involve changes in NPDES permit limits.

Action or change:

NO MODIFICATION PROPOSED

23. The permit should require Pope & Talbot to submit a 20 year plan, similar to Facility Plans required of Municipalities, that will identify how their wastewater control facilities will be planned and upgraded so that their discharges, when combined with other currently existing and projected new discharges from future growth in the Willamette Valley will not use up the assimilative capacity of the river at the cost of others. (Hearings Officer Note: The comments expressed in this issue relate to concerns that if Pope & Talbot's permit does not contain requirements to continually improve the quality of their effluent, then they will have

no incentive to do so. Accordingly, future residents and industries that will need to rely on the Willamette River to accommodate treated wastewater discharges will be held to more stringent treatment standards because the Pope & Talbot has already received a previously approved allotment of the load).

Department position/response:

Most major municipal NPDES permits include requirements for the permittee to submit a facility plan that details, among other things: The growth that is expected to take place within the service area, the required maintenance/repairs expected for the service area, corrective actions required by permit/order (such as inflow/infiltration or combined sewer overflows), allowances for expected industrial wastewater contributions, and a detailed summary of how the various capital improvement projects will be financed. These requirements are placed on municipalities to assure that public funds are utilized effectively/efficiently and that overall goals are reachable. Such plans are usually developed for periods of twenty years.

Due to their nature, Industrial facilities do not have the ability to predict what the economic climate will be in the future, and certainly not twenty years in advance. A given municipality has a number of indicators regarding the growth that can be expected and the capital expenditures required to accommodate such growth. Industries are required to compete on the open market and adjust to economic changes, market conditions, and available supply of raw materials as they occur. Based on these differences, the Department feels that twenty year facility plans for industry are not feasible.

In response to the Hearings Officer Note, the Willamette River has not been determined to be water quality limited in the area in question. If future studies indicate that the river has reached, or is approaching, water quality limiting status, a TMDL assessment will be conducted by the Department and load allocations to correct any limiting factor will be established by administrative rule.

Action or change:

NO MODIFICATION PROPOSED

24. The permit should establish specific sludge elevation/accumulation limits in the various wastewater

treatment components of the permittee's system to ensure waste sludge removal is accomplished periodically to prevent solids carryover into the discharge and to ensure all treatment components are operating as efficiently as possible.

Department position/response:

Initially, the Department felt that this issue could be addressed by a requirement for Pope & Talbot to monitor the level of sludge in the ASB and upon reaching a predetermined action level, remove the sludge for appropriate disposal or use. After additional review by the Department it was determined that such a requirement would not be practical. The sludge in the ASB does not accumulate in a uniform manner on the floor of the ASB. The sludge is deeper near the corners of the basin, the toe of the dikes, and in areas not under the influence of the water movement provided by the aerators. In municipal wastewater treatment plants the removal of sludge from certain treatment units is required due to the possibility of washout (i.e. excessive hydraulic loading causes the flow within the treatment unit to become turbulent and carry solids/sludges out of the cell). Many municipalities are subject to substantial increases in hydraulic loading during high groundwater periods and storm events due to inflow/infiltration caused by aging sewers, illegal connections, or a collection system that includes some combined sewers. Even small municipal service areas (<50,000 population) can have hundreds of miles of sanitary sewers subjected to various degrees of inflow and infiltration.

The increase in hydraulic loading which is common to many municipalities does not occur within the Pope & Talbot collection system because the system is small in comparison to municipalities and has a limited number of connection points into it. Although the majority of the plant site storm water is collected and discharged to the wastewater treatment system, the impact is minimal due to the long retention time of the ASB. The Department is confident that washout of the ASB is unlikely. With the revised permit limits contained in Schedule A, there is adequate incentive for the permittee to control sludge levels to ensure that compliance with permit limits will be maintained. In addition, Schedule B requires that sludge depth in the ASB be reported two times per year.

Action or change:

NO MODIFICATIONS PROPOSED

25. The permit should establish a requirement for Pope & Talbot to conduct a comprehensive aquatic wildlife study in cooperation with the Department of Fish and Wildlife to verify that no critical habitat or endangered species are being impacted by the permittee's discharge.

Department position/response:

The Department contacted the State of Oregon, Department of Fish and Wildlife to advise them of these concerns. Should the Department of Fish and Wildlife notify the Department that they have any concerns with regard to impacts on critical habitat or endangered species, the Department would respond to these concerns immediately. In addition, the Willamette River Study currently in progress has indicated that the segment of the Willamette River in the vicinity of the Pope & Talbot discharge is not water quality limited for any factor, nor have any negative impacts been documented with regard to aquatic habitats or populations.

Action or change:

NO MODIFICATIONS PROPOSED

ATTACHMENT A

Acronym Definitions

ADMT.....Air Dried Metric Ton

ASB.....Aerated Stabilization Basin

AOX.....Adsorbable Organic Halogens

BOD_5.....5-day Biochemical Oxygen Demand

BPJ.....Best Professional Judgement

BPS.....Bleach Plant Sewer

BPT.....Best Practicable Treatment

ClO_2.....Chlorine Dioxide

DEQ.....Department of Environmental Quality

DMR.....Discharge Monitoring Report

EQC.....Environmental Quality Commission

JR.....James River

Kg.....Kilogram

lb/day.....Pounds per Day

mg/day.....Milligrams per Day

MGD.....Million Gallons per Day

ml.....Milliliters

NH_3-N.....Ammonia-Nitrogen

NO_3-NO_2-N.....Nitrite-Nitrate-Nitrogen

NPDES Permit.....National Pollutant Discharge Elimination System Permit

NPV	Notice of Permit Violation
OAR	Oregon Administrative Rule
P&T	Pope & Talbot
pH	Log of Hydrogen ion concentration
TCDD	2,3,7,8-tetrachloro-dibenzo-p-dioxin
TCDF	2,3,7,8-tetrachloro-dibenzo-furan
THM	Trihalomethane
THMFP	Trihalomethane formation potential
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
ton/day	Tons per Day
TSS	Total Suspended Solids
UV-254	Ultraviolet Absorbance
US-EPA	United States Environmental Protection Agency
WET	Whole Effluent Toxicity
WLA	Waste Load Allocation
7Q10	The lowest seven day average flow that would occur over a ten year period.

State of Oregon
Department of Environmental Quality Memorandum

Date: April 13, 1993

To: Pope and Talbot NPDES Permit Renewal Files, Application No. 997246, Pope and Talbot Halsey Mill, Linn County, Oregon.

From: Gary Messer RS, Hearings Officer

Subject: Hearing Officer Report on Issues Raised during the Public Hearings conducted on March 15 and 16, 1993, and the Written Comment Period which ended on March 23, 1993.

OVERVIEW AND SUMMARY STATEMENTS

In response to the public hearing process extensive oral and written comments were received in regard to this proposed permit action. Testimony was provided from numerous citizens, elected officials, businesses, labor organizations, municipalities, public officials and agencies, charitable organizations, and environmental organizations. Testimony was received from a wide geographic area beyond the local area of the mill including submittals from some businesses and citizens from the State of Washington, Portland, all of the Willamette Valley Counties, and Lincoln County. The majority of testimony was received from Linn and Benton County residents.

Testimony received expressed numerous and varied views ranging from outright support for reissuance of the permit with no permit modifications to extreme opposition with opinions expressed that DEQ could not, or should not, legally reissue the permit. Between these view points, significant testimony was submitted requesting and/or suggesting that the permit, as drafted, needed to be modified to address both environmental and health concerns in regard to the various beneficial uses of the Willamette River and as it relates to being the domestic water supply for the City of Corvallis.

Because of the volume of testimony provided, it was not practical to include and/or restate every testifiers comments in this summary report specifically as submitted. All testimony, both oral and written, was reviewed and given equal weighing in identifying the major issues brought out that were of concern to the majority of testifiers requesting or suggesting permit modifications.

COMMENTS RECEIVED THAT WENT BEYOND SCOPE OF THIS INDIVIDUAL PERMIT ACTION

Several of the major issues of concern went beyond the scope of this individual permit action. Because these were repeatedly brought up as issues of public concern, they are identified below so the Department is aware of these issues and the likelihood they may resurface at future permit actions. Accordingly, the Department should consider these views as program needs, new policy and/or rules are being reviewed in the future. The issues falling in this category were:

1. Industrial wastewater permittees should be bound to the same permitting, treatment, and load standards as are applicable to municipal wastewater permittees. Because current federal standards generally provide industrial dischargers with higher load allowances, concerns exist that municipalities will be required to expend more than their share of the costs to maintain and improve receiving water conditions when the primary cause of impact can be related to the high allowable loads being discharged by industrial sources. Comments were also made that industrial discharges have no requirements to address long range planning needs or to manage their treatment process sludges as is required of municipalities and similar requirements are needed.

2. Oregon needs to implement a more aggressive policy to reduce, reuse, and ultimately eliminate discharges to public waters. Because current rules only have additional requirements when increased discharges or stream degradation is involved, there is no incentive for dischargers to reduce or eliminate their current discharges.

3. DEQ's administrative rules in regards to color, odor, general nuisance or aesthetic impacts are subjective and do not provide adequate controls for obvious impacts. Specific measurable standards should be adopted for these parameters and included in permits so they will be regulated.

4. EPA's and DEQ's reliance on self-monitoring of the permittee's production records, treatment processes and discharges to verify permit compliance provides suspect data. Accordingly, DEQ staff, or independent 3rd party sampling should be required to ensure submission of unbiased data and all permit limits are being achieved.

5. Because of all the unknown chemicals that may be contained in industrial wastewater discharges, EPA's and DEQ's

monitoring requirements are not adequate to ensure public health needs are being met. Accordingly, monitoring parameters need to be expanded to include embryo and human tissue cultures to verify discharges are not having either short or long term impacts to those who live by or use the receiving waters for beneficial purposes.

COMMENTS RECEIVED FALLING WITHIN THE SCOPE OF THIS PROPOSED PERMIT ACTION

The follow is a summary of views that related specifically to this proposed permit action. It needs to be stated that there was significant testimony provided in support of reissuance of the permit as drafted with no modifications. Accordingly, this support viewpoint was noted; however, since no permit modifications were suggested there is no items of discussion for those offering this view. There was also a moderate level of views expressed that the permit simply should not be reissued because of water quality impacts, but no specific discussion other than to voice opposition to the proposed permit renewal. Accordingly, this non-supportive viewpoint for reissuance of the permit was noted.

The following views; however, represent those most commonly expressed in regards for specifically requested permit modifications. These views are summarized in the order and permit schedules they would applicable to in the proposed draft permit.

General Issues/Views

1. Before final action is taken, this proposed permit action should be reviewed by the Oregon Environmental Quality Commission (EQC) to ensure DEQ has addressed all environmental and public health concerns.

2. This permit action should be delayed until the Willamette River Basin Study is completed and EPA's new Drinking Water Standards are adopted so more complete data will be available to base permit limits and conditions upon.

Schedule A- Waste Disposal Limitation Issues/Views

3. The overall limitations of Schedule A do not provide limits that are protective of general water quality, aquatic life, recognized beneficial uses associated with recreation and aesthetic values, nor do they provide adequate safeguards to the City of Corvallis' drinking water supply in regards to odors, taste, and THM formation potentials.

4. Based on the current production levels, past monitoring data, river flow conditions, and the removal of the James River Paper wastewaters from the Pope & Talbot wastewater system, the proposed BOD and TSS limits should be significantly reduced, different BOD and TSS discharge load limits established for winter and summer periods, and the summer period be redefined to be from May 1 through October 31.

5. BOD and TSS load limits should be established based upon the current loads actually being discharged as that is representative of the current mill's production of 550 ADMT/Day of pulp production and is accommodative of current needs. If mill efficiencies allow for expanded pulp productions without expansion of existing facilities, these increased productions must still be accommodated within the established BOD and TSS loads that are actually being discharged at this time.

6. pH limits in the permit should be consistent to match the Willamette Basin Standard of 6.5 to 8.5 range specified in OAR's.

7. The proposed color limit in the permit is not adequate to prevent aesthetic or nuisance conditions in violation of Willamette Basin Standards. A specific color limitation is needed so that the color at the end of the mixing zone does not exceed 5 color units more than that of the river immediately upstream of the discharge into the river.

8. The proposed TCDD limits in the permit are based on an annual average discharge of 0.3mg/day into the river and do not take into account the low river flow conditions that occur during the summer months. Accordingly, TCDD limits should be based upon river flow conditions and lowered during the summer periods.

9. The proposed permit should establish a specific AOX limitation.

10. The proposed permit should establish a specific THM formation potential limitation.

Schedule B- Minimum Monitoring and Reporting Requirement Issues/Views

11. The proposed permit should require routine flow meter calibration and checks to ensure accurate flow data is being reported.

12. The permit should require effluent monitoring for NH3-N, N03 & N02-N, TKN, and Total Phosphorus during the summer discharge periods.

13. The permit should require at least quarterly bioassay studies with one or more conducted during the summer low river flow periods.

14. The permit should require expanded monitoring of the sludge generated by the wastewater control facilities to include Total Solids, Volatile Solids, metals, pH, Nitrogen species, Potassium, Phosphorus, TCDD and TCDF, amounts and locations of sludges applied.

15. The permit should require weekly monitoring of Chloroform.

Schedule C- Compliance Conditions and Schedule Issues/Views

16. The permit should establish a compliance date for Pope & Talbot to conduct a study on alternatives for additional color and odor removal alternatives, above and beyond the improvements projected by the new Oxygen Delignification process. The permit should further establish a specific compliance date to have the best alternative and facilities for color and odor reduction in operation.

17. The permit should establish a compliance date upon which Pope & Talbot must have achieved control of color impacts from their discharge so that the color at the mixing zone boundary will not be greater than 5 color units greater that the river water immediately upstream of the discharge point.

18. The permit should establish a compliance date upon which Pope & Talbot must submit a comprehensive evaluation of treatment and disposal alternatives beyond their current aerated lagoon technology that would significantly reduce or eliminate current loads and/or discharges to the river.

19. The permit should establish a compliance date upon which Pope & Talbot must submit a Sludge Management Plan for both their domestic and industrial wastewater sludges, prepared in a manner similar to that required of Municipal sewerage system permittees.

20. The permit should establish a compliance date upon which Pope & Talbot must complete a study that will conclusively show if there is any correlation between their wastewater discharges of AOX and the creation of THM formation

potentials.

Schedule D- Special Condition Issues/Views

21. The permit should specifically establish a production cap of 550 ADMT/Day of pulp on an annual average, and this level could not be exceeded for any reason without first obtaining a permit modification that would first require reopening of the public review and hearing process.

22. The permit should contain a reopener clause that mandates review and modification of permit limits in the event technical studies ongoing by either DEQ, or the joint studies in process between Pope & Talbot, James River and the City of Corvallis, show that either Pope & Talbot's discharge or the combined discharge of Pope & Talbot and James River is causing any deleterious impacts on the City of Corvallis' domestic water supply.

23. The permit should require Pope & Talbot to submit a 20 year plan, similar to Facility Plans required of Municipalities, that will identify how their wastewater control facilities will be planned and upgraded so that their discharges, when combined with other currently existing and projected new discharges from future growth in the Willamette Valley will not use up the assimilative capacity of the river at the cost of others. (Hearings Officer Note: The comments expressed in this issue relate to concerns that if Pope & Talbot's permit does not contain requirements to continually improve the quality of their effluent, then they will have no incentive to do so. Accordingly, future residents and industries that will need to rely on the Willamette River to accommodate treated wastewater discharges will be held to more stringent treatment standards because the Pope & Talbot has already received a previously approved allotment of the load).

24. The permit should establish specific sludge elevation/accumulation limits in the various wastewater treatment components of the permittee's system to ensure waste sludge removal is accomplished periodically to prevent solids carryover into the discharge and to ensure all treatment components are operating as efficiently as possible.

25. The permit should establish a requirement for Pope & Talbot to conduct a comprehensive aquatic wildlife study in cooperation with the Department of Fish and Wildlife to

verify that no critical habitat or endangered species are being impacted by the permittee's discharge.

Hearings Officer Recommendations

1. The Environmental Quality Commission members should be updated on this permit action and updated on the current issues of concern in regards to both issues that fell outside the scope of this permit action as well as those that were pertinent to this permit action.

2. The issues identified above that fell outside the scope of this individual permit action should be called to the attention of the Department of Environmental Quality's Water Quality Division Administrator and the Department's Director so they are informed of the general concerns that exist with issuance of water quality discharge permits in Oregon. These comments represent repeated testimony and provide good insight to the Department on public sentiment as existing rules, policies and water quality needs are reviewed.

3. DEQ technical staff needs to reevaluate each of the above issues that were identified as relating specifically to this permit action. Technical staff should then determine where new information was provided that would support modifications within the bounds of current federal and state rules and regulations that govern the issuance of NPDES permits with wastewater discharges into the Willamette River. If requested modifications are found that can be supported by rule, these should be accomodated unless they are the subject of a prior EQC action that has authority to grant variances or exceptions. Where these situations might be encountered, technical staff needs to clearly identify this so there is no perception that DEQ is not addressing issues required in state rules. For those issues that are not specifically or clearly defined by existing rules, DEQ staff are encouraged to bring these concerns to the attention of Pope and Talbot to see where room may exist to accommodate public concerns, but not necessarily within the context of a permit condition.

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LANE
POWELL
SPEARS
LUBERSKY

May 20, 1993

Law Offices

520 S.W. Yamhill Street Suite 800 Portland, OR 97204-1383

(503) 226-6151

Telex: 269029-SPRS-UR Facsimile: (503) 224-0388

Partnership Including Professional Corporations

William C. Carpenter, Jr., Esq.
Peter Sorenson & Associates
P.O. Box 10836
Eugene, Oregon 97440-2836

Re: Columbia River United

Dear Mr. Carpenter:

I am responding on behalf of James River Corporation to your April 14, 1993 notice of intent to file a citizen suit under the Clean Water Act. The theories in your notice do not support a citizen suit. They are simply contrary to law, as well as the facts of the Wauna permit. The following is a brief outline of our analysis of jurisdiction under the citizen suit provision. I ask that you reconsider the threatened suit.

First, contrary to your assertion, the permit currently in effect for the Wauna mill was issued on November 14, 1990, not in 1983.[1] Since the current permit contains limits for both dioxin and AOX, you are wrong in your contention that the discharge of dioxin and chlorinated organic compounds is unauthorized.

We can only assume that you believe that the 1990 permit is not in effect because of the EQC's pending reconsideration of the AOX limits. If so, you are mistaken. Under federal process, when specific requirements of a reissued permit are challenged for reconsideration, only the challenged provisions are stayed pending final agency action. 40 CFR § 124.16(a)(1). The remainder of the permit is fully effective and enforceable pursuant to its terms. Id. § 124.16(a)(2). Both DEQ and EQC have traditionally interpreted their NPDES administrative process in a manner consistent with the federal process codified at 40 CFR Part 124.

[1]The permit was modified by EQC in April 1992 and reissued bearing a reissuance date of May 26, 1992. It expires on November 30, 1995.

Anchorage, AK
Los Angeles, CA
Mount Vernon, WA
Olympia, WA
Portland, OR
Seattle, WA

London, England
Tokyo, Japan

Moreover, continued discharge during the period of stay does not constitute a violation of the CWA. This was argued and decided 10 years ago. See, e.g., Menzel v. County Utilities Corp., 712 F2d 91 (4th Cir 1983).

Second, even assuming that you were correct that James River's 1983 permit is still in effect, the absence of dioxin and AOX limits in that permit does not subject James River to citizen suit under section 505, because dioxin and chlorinated organic compounds discharged by James River are part of an industrial wastestream unambiguously identified and permitted in the 1983 permit.

NPDES permits authorize the discharge of specific wastestreams and all pollutants within those wastestreams, all according to the limits, conditions and parameters which the issuing agency finds appropriate to regulate. Although CWA sections 301 and 402 speak to the discharge of "pollutants," the term "pollutant" is defined in terms of wastestreams, rather than specific chemical compounds. 33 USC § 1362; 40 CFR § 122.2. NPDES application forms require the applicant to identify wastestreams and to provide information on several lists of chemical compounds. The forms do not require the identification of all chemical compounds in a discharge and, in fact, do not even ask the applicant to identify compounds beyond those listed. EPA's and the states' practice in issuing permits is to impose limits for one or a few parameters, not hundreds.

The regulated parameters selected include those addressed by effluent limitations guidelines and pollutants for which there is a reasonable potential for the violation of water quality standards. There simply is no requirement that an agency attempt to address all chemical compounds in a discharge. See Atlantic States Legal Foundation v. Eastman Kodak, where plaintiff alleged that chemical compounds present in Kodak's discharge, but not limited in the permit, constituted a CWA violation. The court held that a citizen suit may only address discharges of pollutants expressly regulated by the permit. ("[A]ccepting the plaintiff's view . . . would effectively circumvent the permit system . . .; it 'would change the nature of the citizen's role from interstitial to potentially intrusive.' . . .") 809 FSupp 1040, 1042-43 (WDNY 1992), appeal filed, ___ F2d ___ (2d Cir).

The two cases which you present in your notice are distinguishable from the Wauna permitted wastestream. In Reynolds Metals the discharge at issue was an identifiably separate discharge from property contaminated with PCBs, not the discharge of a discrete industrial process, as at Wauna. So, too in Sparacino, the discharges at issue were the addition of fungicide and other chemical substances at a specific point as preventive veterinary treatment, and the discharge of ammonia in a distinct wastestream, both of

which constituted unpermitted wastestreams, not merely unspecified chemical compounds in a single wastestream.

In short, you present no new information by these cases: separate wastestreams must be regulated. This, in fact, is the language of James River's current and 1983 permits, both of which provide that "[e]ach other . . . waste discharge to public waters is prohibited." Under "Permitted Activities" James River is authorized to discharge wastewaters "from the authorized discharge point or points" in conformance with the various provisions of the permit. The reference to "other . . . waste discharge[s]" clearly refers to additional wastestreams beyond those at the specified discharge points. Accordingly, the discharge of specific chemical substances not limited in a permit does not violate the CWA or the permit so long as the wastestream as a whole is authorized.

I have taken this response into some detail for the express purpose of putting you to further inquiry. I do not believe that the claims of your April 14, 1993 letter are well grounded in fact or warranted by existing law. Nor do I believe you can muster a good faith argument for extending, modifying, or reversing existing law. Please feel free to contact me if you would like to discuss the matter.

Very truly yours,

John W. Gould

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CC: Dana Rasmussen
EPA Region X Administrator
Fred Hansen
Oregon DEQ
William W. Wessinger
Emery N. Castle
Henry Lorenzen
Carol Whipple
Linda R. McMahon
Robert Morgan
James River Corporation

Oregon Department of Environmental Quality

A CHANCE TO COMMENT ON...

PROPOSED RENEWAL OF
RIVERBEND LANDFILL SOLID WASTE DISPOSAL PERMIT

Date Revised: 3/26/93
Notice Issued: 3/29/93
Comments Due: 4/20/93

WHO IS THE APPLICANT:

This is a proposed permit renewal for:

Sanifill, Inc.
P.O Box 118
McMinnville, OR 97128

WHAT ARE THE HIGHLIGHTS:

The proposed permit is a renewal of the Riverbend Landfill operating permit. It requires Sanifill, Inc., as owner of the landfill, to perform the following actions:

1) Evaluate the current environmental monitoring network and implement an upgraded, comprehensive surface water, gas and groundwater monitoring program for the entire site.

2) Conduct a water well survey, including a door-to-door survey of water information, to identify groundwater users in the vicinity of the landfill. Include this information in the design of groundwater monitoring plans and any future remedial action required by the Department.

3) Install primary composite liners and secondary leachate collection systems for all new cells.

4) Perform a Remedial Investigation and Feasibility Study to determine the level of the risk relative to the leachate release near monitoring well MW-5. Implement a Department-approved remedial activity to deal with the groundwater contamination.

5) Delineate the extent of the 100-year floodplain before proposing any relocation of the eastern temporary flood protection berm.

6) Submit a scope of work, and obtain Department approval, to investigate the presence and extent of critical habitats for rare, threatened, and endangered species. This scope of work must be submitted prior to May 7, 1993.

7) Submit a scope of work for Department approval to identify the uses, nature and extent of the aquifers underneath the landfill.

8) Perform leachate treatment according to Department-approved plans.

9) Apply at least six inches of daily soil cover or a Department-approved alternate cover at the end of each working day in the active disposal areas, and apply twelve inches of low-permeability intermediate soil cover in closed or temporarily inactive areas, where no additional waste is to be placed for at least 6 months.

Sauvie's Island Dump DEQ permit postponed until aquifers ID

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.

10) Improve and upgrade the soil sediment, erosion control and storm water runoff plans to design and construct structures to protect surface water quality.

11) Comply with all aspects of Oregon Revised Statutes (ORS) Chapter 459, including but not limited to, ORS 459.005(24), 459.235(3), and 459.310 to 315 as applicable for regional disposal sites.

In addition, this draft permit establishes a boundary at the edge of the landfill known as the compliance boundary where groundwater monitoring must be conducted. The process to be followed if groundwater is contaminated at this compliance boundary is detailed in this permit.

WHO IS AFFECTED: Residents and property owners in the vicinity of the Riverbend Landfill, all residents and businesses in Yamhill County, and all solid waste haulers who utilize Riverbend Landfill.

NEED FOR PERMIT: The previous Riverbend Landfill permit had an expiration date of January 30, 1992. Under Oregon law, the permit remains in effect until renewed or rescinded by the Department. The permittee submitted an application for renewal in a timely fashion. The Department needed additional information about the site prior to drafting this permit renewal. All the necessary information has been submitted to the Department, thus the draft permit renewal is ready for public comment.

COMPLIANCE HISTORY: There are no enforcement actions documented for the Riverbend Landfill site. There is concern from the local citizens about odor problems, development of the landfill in the 100-year floodplain, and groundwater contamination from the landfill. Addressing these potential impacts is an integral element of this permit renewal.

WHERE TO FIND OTHER DOCUMENTS: In drafting this permit renewal, the Department has relied upon several documents. These documents, including copies of the proposed permit, are available at the following location between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday, and will be available on the evening of the public hearing:

DEQ Headquarters
Hazardous and Solid Waste Division
811 SW Sixth Avenue, 7th Floor
Portland, OR 97204

A copy of the draft permit is located at:

Yamhill County
Planning & Development Department
535 East Fifth Street
McMinnville, OR 97128

PUBLIC PARTICIPATION: Written comments on the proposed permit should be mailed or delivered to DEQ by April 20, 1993, at the above address. Oral and written testimony will be accepted at a public hearing to be held at the following time and location:

April 14, 1993, 7:00 PM
McMinnville Community Center, Auditorium
600 N. Evans Street
McMinnville

WHAT HAPPENS NEXT: DEQ will review and consider all comments received during the public comment period. Following the review, the permit may be issued as proposed or modified.

Department of Environmental Quality

Listing of More Stringent Regulatory Requirements

This listing identifies provisions of Oregon Law and DEQ rules that may be viewed as more stringent than federal requirements. This listing is divided into four categories as follows:

1. State Law Requirement; No Federal Counterpart
2. State Law Requirement; More Stringent than Federal Counterpart
3. DEQ Rule Requirement; No Federal Counterpart
4. DEQ Rule Requirement; More Stringent than Federal Counterpart

The term "DEQ Rules" refers to rules adopted by the Environmental Quality Commission (Commission or EQC) which DEQ implements.

The following **"key words"** are used to identify the primary justification or rationale for DEQ rules that are arguably more stringent than counterpart federal requirements:

Prevention -- The rule requirements are intended to prevent pollution problems from occurring, and thus reduce the need for costly cleanups or retrofitting to add pollution control facilities.

Growth Accommodation -- The rule requirements are intended to achieve and maintain some capacity to accommodate growth and development by assimilating new or expanded pollutant discharges or emissions.

Equity -- The rule requirements are intended to make the requirements applicable to sources more equitable and fair.

Certainty -- The rule requirements are intended to simplify and clarify federal requirements, reconcile apparent inconsistencies and conflicts between various federal rules or between federal requirements and state law requirements, and provide greater certainty for the regulated community.

Health and Environment -- The rule requirements are intended to assure protection of public health and environmental quality, especially in areas where federal rules fail to address the issue, federal rules attempting to address the issue are delayed (slow promulgation or court challenge), or the federal rules simply provide inadequate protection.

Predates -- The state rule **predates** the federal requirement. Many federal rules are adopted long after states have addressed the environmental concerns. If the later federal rule is less stringent than the state rule, an evaluation is conducted and the Department will propose to relax the state rule if it concludes that public health and environmental quality will be protected and the action will be consistent with state policy direction.

Public Concerns -- Oregon citizens may express strong concerns about issues that EPA has not addressed, either because they lack the authority, or because the issues is not a high enough national priority.

Performance Standards -- Some rule requirements reflect the choice of procedures or mechanisms to achieve environmental performance standards, and may appear to be more stringent than minimum federal procedures or minimum technology standards.

Efficiency -- Some rule requirements are intended to define a better way to address multiple, potentially conflicting requirements or allow for more effective use of limited staff or other resources.

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1. STATE LAW REQUIREMENT; No Federal Counterpart

General

- Oregon's requirements in law and rule for review and approval of pollution control facility plans is an example of a "preventive" requirement that generally does not exist as a regulatory requirement in federal law. These requirements give an opportunity to make sure, prior to construction, that environmental requirements will be met. Through routine inspections, DEQ staff become aware of design problems that can be prevented in the future. It is almost always cheaper to make changes prior to construction to address a potential problem rather than coming back later to retrofit a facility to correct a problem. (In one area, plan approval is required under federal rules and that is as a condition for receiving financial assistance for sewerage works construction under federal grant or state administered revolving loan fund programs.)

- Oregon law requires DEQ actions to be consistent with acknowledged land use plans and statewide planning goals. This requirement necessitates some procedural requirement applicable to permittees that are not federally required. DEQ rules require a land use compatibility statement to accompany permit applications to assist in assuring compliance with this state statutory requirement. Such requirements are part of an overall process that attempts to prevent problems up front by appropriate planning and environmental review.

- Oregon law and DEQ rules impose fees in most program areas to recover part of the cost of program implementation. The only federally mandated fee is a per ton emission fee requirement imposed by the federal Clean Air Act.

Air Quality

- Oregon law and DEQ rules provide for licensing and certification of asbestos workers and contractors to prevent exposure to asbestos by contractors and the public. Asbestos is regulated as a hazardous air pollutant under the federal Clean Air Act, but the federal rules do not address contractor licensing and certification. [ORS 468A.700-760; OAR 340-33-010 thru 090]

- DEQ eliminated most of its wood stove certification program when federal requirements were adopted. However, the efficiency certification requirements that are mandated by state law were retained. There are no federal efficiency certification requirements. [ORS 468A.480; OAR 340-34-045 thru 115]

- DEQ Noise regulations have been adopted pursuant to Oregon law. There is no comparable noise regulatory requirement in federal law or rule. (The noise rules remain in effect, however, DEQ budget for implementation was deleted in 1991.) [ORS 467.010-990; OAR Chapter 340, Division 35]

Water Quality

- Oregon law bans the use of anti-fouling paints containing TBT (Tri-Butyl Tin) due to toxic adverse effects on oysters in Oregon bays. There is no similar federal prohibition on the use of TBT. [ORS 634.500 et.seq.]

- Oregon law has banned the sale of detergents containing phosphorous in an effort to reduce the pollution caused by phosphorous in treated wastewater discharges to streams. There is no similar federal prohibition. [ORS 468B.120 et.seq.]

- Pursuant to Oregon law, DEQ regulations establish a program and criteria for certification of sewage facility operators. To be certified, operators must demonstrate their knowledge and ability to operate such facilities. Sewage facilities must be supervised by a certified operator. Examination fees are collected to underwrite the Department's program administrative costs. Operators certification programs have been established in 48 states. Oregon's operators certification program is similar to programs which have been instituted in other western states. Federal regulations for operators certification are envisioned in the next two to five years. [ORS 448.405 et.seq.; OAR Chapter 340, Division 49]

- Oregon law and DEQ rules require private sewerage facilities with a design capacity greater than 5,000 gallons per day to post a performance bond. [ORS 454.425; OAR Chapter 340, Division 15]

- Pursuant to state law, DEQ has adopted extensive rules governing the construction, alteration, repair, operation and maintenance of standard and alternative on-site sewage treatment and disposal systems (septic tanks, drain fields, sand filters, etc.). Generally, these are the types of systems that serve individual houses and businesses. Rules also establish a process for consideration of variance from standards, establishes licensing requirements for persons engaged in sewage disposal service activities, and contains a schedule of application fees. There is no entity of the Federal Government that has jurisdiction over this subject matter. [ORS 454.605 et.seq., OAR Chapter 340, Division 71 and 73]

- Oregon law establishes a process that can result in forced annexation of property to a city or district and a requirement that the city or district construct facilities as necessary to alleviate a health hazard in the area. [ORS 222.840 et.seq.]

Hazardous Waste

- Oregon law (and DEQ rules implementing that statute) requires facilities to go through a siting process while applying for a DEQ permit to build a hazardous waste or PCB treatment or disposal facility. [ORS 466.025(3), ORS 466.055; OAR Chapter 340, Division 120]

- Pursuant to Oregon law, DEQ rules require that hazardous waste disposal facility permits be denied if the Health Division so recommends. [ORS 466.135; OAR 340-106-003]

- Oregon law requires all large and small hazardous waste generators and persons reporting toxic chemical releases to EPA under the federal community right to know legislation to develop Toxics Use Reduction Plans. Plans must include a statement of management support, analysis of toxics use and hazardous waste generation, identification of reduction opportunities and implementation strategies, establishment of employee awareness and training programs, and institutionalization of the program to ensure an on-going effort. Those required to submit plans must also report annually on their progress to DEQ. EPA has adopted some waste reduction planning requirements under the Storm Water Program and is considering it in other areas, but does not currently have comparable requirements. [ORS 465.003 through 037; OAR Chapter 340, Division 135]

  Federal law requires all generators shipping hazardous waste off-site to have a waste minimization program. EPA has accepted an Oregon generator's Toxic Use Reduction Plan as evidence of having met this federal program requirement.

Solid Waste

- For years, DEQ has had regulations governing solid waste landfills, industrial landfills, septage lagoons, incinerators, transfer stations, and solid waste treatment facilities such as composters and material recovery facilities. Under Oregon law, DEQ uses a permit as a primary regulatory tool for such solid waste facilities. EPA rules established performance-based criteria for solid waste disposal facilities which were enforceable only by state programs or by citizen lawsuit. There was no EPA requirement for a permit as a regulatory tool. Thus, it can be argued that the existing DEQ solid waste disposal regulations are more stringent than federal requirements, because states are "allowed" but not "required" to have a solid waste regulatory program.

[ORS 459.005, 459.045, 459.205, 459.215 through 335; OAR Chapter 340, Divisions 93, 94, 95, 96, and 97]

- Oregon law requires that if another state prohibits or restricts the disposal of any waste, the same prohibition or restriction applies to the disposal of that waste in Oregon. DEQ Solid Waste Rules incorporate that provision. [ORS 459.055(9); OAR 340-93-040(4)]

- Oregon law and DEQ rules prohibit a number of items such as large appliances and tires disposal at solid waste disposal sites. There is no comparable federal restriction. [ORS 459.247; OAR 340-93-040(3)]

- Pursuant to state law, DEQ regulates waste tire storage sites and waste tire carriers (transporters). There is no comparable federal program. [ORS 459.705 to 790; OAR Chapter 340, Division 64]

- Historically the federal government has always viewed solid waste management, particularly solid waste reduction and recycling, as programs that are the responsibility of state and local government. Consequently, there are no comparable federal requirements for solid waste reduction and recycling. [ORS 459.250, ORS 459A; OAR Chapter 340, Divisions 90 and 91] Examples of state solid waste reduction and recycling program requirements that exist solely as state mandated programs resulting from state law are:

  -- **Recycling Programs for Communities over 4,000 population:** State law requires communities to provide public education and promotion programs for recycling as well as recycling collection programs that include such options as weekly collection service, recycling collection containers, yard debris collection programs, and commercial recycling collection.

  -- **Legislatively mandated recycling recovery rates for each wasteshed:** State law requires each wasteshed in the state to achieve a certain recovery rate of recyclable materials by 1995.

  -- **Minimum recycled content for certain materials sold in Oregon:** State law establishes minimum recycled content requirements for glass food and beverage containers, newsprint, directories and as one of several options for rigid plastic containers. These content requirements are established as a method to stimulate markets for recyclable materials.

  -- **Lead Acid Battery Recycling:** State law provides that retailers of lead acid batteries shall take back used batteries from customers and these batteries are returned to the manufacturer for recycling. Lead acid

batteries have been banned from disposal and are recycled at a rate over 93% in Oregon because of this law.

-- **Selling of Batteries:** State law mandates that alkaline manganese batteries with more than .025 percent mercury cannot be sold in Oregon. Certain battery operated products with rechargeable batteries must have easily removable batteries.

-- **Recycling and Solid Waste Reduction Certification:** State law requires that anyone wishing to dispose of more than 1,000 tons a year of solid waste in Oregon landfills must certify that they are providing the opportunity to recycle comparable to Oregon's local recycling requirements. In addition if someone wishes to dispose of 75,000 tons or more a year in an Oregon landfill they must have an approved waste reduction program that demonstrates they are making the best effort possible to reduce waste prior to any disposal.

-- **Household Hazardous Waste:** Oregon law created a household and small business hazardous waste collection program which provides for separation and safe management of household and small business hazardous wastes that create environmental and health hazards if disposed with the general solid waste stream.

Underground Storage Tanks

- Oregon law provides for licensing of contractors and certification of supervisors involved in installation, testing, and decommissioning of underground storage tanks. EPA has no similar program or requirement. (Prevention, Health and Environment, Efficiency, Public Concerns) [ORS 466.750(1)-(5); OAR Chapter 340, Divisions 160, 162, 163]

- Under Oregon law and DEQ rules, regulated substances (e.g. motor fuel) may not be deposited into an UST that does not have an UST permit. EPA does not have this requirement. [ORS 466.760(2); OAR 340-150-150]

2. STATE LAW REQUIREMENT; More Stringent than Federal Counterpart

Air Quality

- State law and DEQ rules require sources to obtain an air contaminant discharge permit. The 1990 Clean Air Act amendments establish a federal permit requirement for some sources, but not all sources. [ORS 468A.040-075; OAR Chapter 340, Division 14, OAR 340-20-140 et.seq.]

Water Quality

- Oregon law and DEQ rules require permits for wastewater treatment and disposal facilities that do not discharge to streams; EPA does not. Such permits assure proper operation of waste treatment and disposal facilities so that pollution of streams and groundwater does not occur. [ORS 468B.050; OAR Chapter 340, Divisions 14 and 45] [The NPDES (National Pollutant Discharge Elimination System) permit is a joint Federal/State permit for discharges to streams; the WPCF (Water Pollution Control Facilities) permit is used for facilities where state law provides for a permit and a federal permit is not required.]

- DEQ has rules which were adopted to control and limit the placement of auto bodies and parts thereof, including tires, as river bank stabilization. The EPA has no specific regulations pertaining to this activity, although EPA could possibly require an NPDES permit for this activity. [ORS 468B.065; OAR Chapter 340, Division 46].

- DEQ requires Water Pollution Control Facility (WPCF) permits for Confined Animal Feeding Operations (CAFO); EPA requires permits only for larger CAFO facilities and then only if there is a potential discharge to surface water. [ORS 468B.050(d), 468B.200 et. seq.; OAR Chapter 340, Divisions 14 & 45]

- Federal law requires oil spill contingency plans for oil storage facilities, and oil tankers and barges. Oregon law and DEQ rules are more stringent than federal requirements in that they require cargo vessels above a certain size to be covered by a spill contingency plan. Oregon requirements are also more specific about prevention requirements. [ORS 468B.340 et.seq.; OAR Chapter 340, Division 47]

- The Oregon Legislature adopted a Groundwater Protection Act in 1989. There is currently no federal groundwater legislation that would compare to this. EPA has issued "guidance" on what they think a state groundwater program should look like, however, may not have current authority to require or implement such a program. The goals of EPA's guidance document are similar to the goals of the Oregon Groundwater Protection Act. [ORS 468B.150 et.seq.; OAR Chapter 340, Division 40]

Hazardous Waste

- Oregon law requires a hazardous waste treatment and disposal facility to justify the need for increases in capacity or changes in handling and disposal methods. [ORS 466.055(4); OAR 340-105-021]

- Oregon law requires all unwanted pesticides and pesticide residues to be classified as a hazardous waste unless specifically declassified by DEQ rules.

DEQ rules limit the amount of pesticide residues required to be regulated as hazardous waste to those failing an aquatic toxicity test. The federal program regulates a smaller number of pesticide residues as hazardous waste. [ORS 466.005(7)(a); OAR 340-101-033(5), OAR Chapter 340, Division 109]

- Oregon law defines used pesticide containers as Hazardous Waste. Some believe the requirements of this law go beyond the comparable federal requirements. DEQ rules limited this definition by exempting decontaminated containers. This rule was developed with assistance of an advisory committee consisting of representatives from the agriculture pesticide use and application industry, forestry, home pest control, the universities, and lawn and garden interests. Federal RCRA regulations require triple rinsing of pesticide containers having held a "P" listed (acutely toxic) pesticide. Containers having held a "U" listed (toxic) pesticide are considered empty while containing one inch of residue. [ORS 466.005(7)(c); OAR 340-101-033(5), OAR Chapter 340, Division 109]

- Oregon law and DEQ rules require a public hearing on a proposed permit for a hazardous waste disposal site; a hearing is discretionary under EPA rules. [ORS 466.125, 466.130; OAR 340-106-012]

- Oregon's open records law defines conditions under which information submitted to an agency such as DEQ may be kept confidential. DEQ rules are based on this Oregon law. Hazardous waste sources note that Oregon's requirements necessitate extra effort to try to justify confidentiality, and may result in denial of a request for confidentiality that EPA would approve, and are thus more stringent. Oregon law establishes a fundamentally more open policy related to public records than the federal requirements. [ORS 466.090(2), 192.410 et.seq.; OAR 340-100-005, 340-105-012]

- Oregon law requires immediate reporting of spills of hazardous materials to the Emergency Management Division if the responsible person knows the spill or release is a reportable quantity. Federal law requires reporting of spills to the National Response Center. Some believe this requirement for dual reporting is unnecessary and overly stringent. Reporting to the state Emergency Management Division facilitates immediate state response. [ORS 466.635; OAR 340-108-020]

Underground Storage Tanks

- Oregon law and DEQ rules require a permit for underground petroleum and chemical storage tanks. EPA requirement is for registration only. [ORS 466.760; OAR 340-150-020]

- Oregon law allows the EQC to approve variances from standard practices for installation of underground storage tanks after making findings. The EQC can

delegate the variance authority to the Department and has done so by rule. The rule requires approval of plans for any deviation from standard practice for underground tanks. EPA requires submittal only and does not require approval. [ORS 466.780; OAR 340-150-003]

- Oregon law provides for geographic underground storage tank rules which are more stringent than federal minimums, where needed. The federal program has no such provision. Note: At this time the Environmental Quality Commission has adopted no geographic specific rules. [ORS 466.745(2); OAR 340-150-125]

3. DEQ RULE REQUIREMENT; No Federal Counterpart

Air Quality

- Oregon has requirements dealing with visible emissions from automobiles; EPA does not. DEQ also conducts noise tests in conjunction with auto emission inspections; there is no similar federal requirement. [OAR 340-24-005 thru 040, 340-24-337] *(Public Concerns)*

- Oregon has requirements to prevent odors and nuisances caused by air emissions. EPA has no comparable requirements. [OAR 340-21-050, 340-28-045, 340-29-011] *(Public Concerns, Health and Environment)*

- DEQ has adopted rules for air emissions from crematories. EPA has not established comparable rules for this source category. [OAR 340-25-890 thru 905] *(Public Concerns, Health and Environment)*

- Prior to the existence of DEQ, a number of local air authorities regulated air quality in Oregon. The rules of these authorities were incorporated into DEQ rules for the areas of the state formerly regulated by the authorities when they were dissolved. In some cases, these rules have no federal counterpart. For example, the rules for certain counties include a large particulate standard to prevent deposition on private property, fugitive emission requirements and odor requirements. [OAR 340-28-001 et.seq., 340-29-001 et.seq.] *(Predate, Public Concerns, Health and Environment)*

- Requirements for reporting of excess air emissions were adopted to clarify requirements for sources which exceed emission standards and to address sources liability for scheduled maintenance and similar activities. While these rules were based on federal guidance, no comparable federal rules existed at the time. New federal requirements for certain major sources address excess emissions in part, and DEQ plans to coordinate and combine requirements where possible. [OAR 340-20-350 thru 380] *(Predate, Certainty, Efficiency)*

Water Quality

- The Environmental Quality Commission has adopted rules and guidelines which require application of all reasonable and available methods for control of wastes and chemicals relative to design, construction, operation, and closure of mining operations which use cyanide or other toxic chemicals to extract metals or metal-bearing minerals from the ore and which produce wastes or wastewaters containing toxic materials. There are no similar federal requirements. These rules are intended to prevent water pollution, protect public health and the quality of the environment, and give early warning and certainty regarding environmental requirements to the mining industry as they develop plans and proposals for mining in Oregon. [OAR Chapter 340, Division 43] *(Prevention, Public Concerns, Certainty, Health and Environment)*

- DEQ rules for the SRF program establish loan fees to provide funds to pay for administration of the program. These fees are not specifically mandated by state statute, nor are they prohibited. Such fees are not federally required. [OAR 340-54-065(8)] *(Efficiency)*

Hazardous Waste

- 3% and 10% mixture rule: This is a label applied to a rule in the hazardous waste program. This state rule was originally adopted to fill a major loophole in the EPA Hazardous Waste (RCRA) program which allowed certain hazardous used or unused chemicals to be mixed or contained in wastes and thus avoid being regulated under the Federal program. The DEQ rule regulates as hazardous wastes those wastes containing 3% or more of the chemicals which EPA lists as "acutely toxic" or 10% or more of the chemicals that EPA lists as simply "toxic". At the time the rule was adopted, EPA only regulated pure solvents use for degreasing operations, and not mixtures containing more than one solvent. EPA recently promulgated rules for the Toxic Characteristic Leaching Procedure (TCLP) test. This test procedure now addresses more of the 3% and 10% toxic chemicals than before, and, therefore addresses some of the DEQ concerns associated with mixing and diluting hazardous chemicals and wastes to avoid regulation. The Commission has adopted the federal TCLP rule by reference. The Department's Hazardous Waste Advisory Committee will be asked to evaluate this issue when it reconvenes and recommend whether the 3% and 10% rule should be revised or deleted. [OAR 340-101-033(2)] *(Prevention, Health and Environment, Equity)*

- DEQ rules regulate processing residues from the extraction and beneficiation of ores and minerals as hazardous wastes if the wastes are determined through testing to fall within the classification as hazardous waste. EPA hazardous waste rules under direction of congress (the Bevill Amendment) exclude such wastes from hazardous waste classification, regardless of testing results. [OAR 340-101-004(1) and (2)] *(Equity, Health and Environment, Certainty)*

- DEQ rules regulate nerve gas as a hazardous waste. EPA rules do not currently regulate nerve gas. Oregon is one of only about 6 states where nerve gas is stored in large quantities; hence it is not a priority national issue. EPA may soon regulate this material under the Federal Facilities Compliance Act of 1992. [OAR 340-101-033(6)(a) & (b)] *(Health and Environment, Certainty, Public Concerns)*

- DEQ rules prohibit modification or reconstruction of existing hazardous waste management facilities without a permit. EPA rules do not. [OAR 340-105-010(c)] *(Prevention, Certainty)*

- DEQ rules do not allow food-chain crops to be grown on sites used for land treatment of hazardous wastes. EPA rules have no similar restriction and therefore allow food-chain crops to be grown on such sites. [OAR 340-104-276] *(Prevention, Certainty, Health and Environment)*

- DEQ rules do not include the EPA provision that compliance with the permit for a hazardous waste incinerator constitutes compliance with rules. Although EPA should be requiring all rules to be reflected in the permit, they fail to do so. DEQ requirements in this regard may be viewed as more stringent. [OAR 340-104-343] *(Health and Environment)*

Solid Waste

- DEQ rules include a new rule specifying requirements for "solid waste treatment facilities". These are not covered by federal criteria. [OAR 340-96-050] *(Prevention)*

- DEQ rules require that leachate storage and treatment systems be designed to the same degree of environmental protection as are landfills. Leachate lagoons are not covered by EPA solid waste criteria. [OAR 340-94-060(3)] *(Prevention)*

4. DEQ RULE REQUIREMENT; More Stringent than Federal Counterpart

Air Quality

- Federal New Source Review (NSR) minimum requirements for attainment and nonattainment areas specify that any proposed new source emitting more than 100 tons per year, and any modified source emitting more than a "significant emission rate" for a given pollutant must go through a new source review process and comply with minimum technology standards. Oregon, as part of its State Implementation Plan (SIP) for attaining and maintaining compliance with air quality standards, lowered the 100 ton threshold for new sources to the significant emission rate for modified sources in order to achieve equity

between new and modified sources and to more adequately protect attainment and maintenance of Federal air quality standards. In the case of a VOC (volatile organic compound) source, for example, this would be going from 100 tons to 40 tons. [OAR 340-20-220 thru 276] *(Equity, Performance Standard)*

- DEQ rules assign a "plant site emission limit (PSEL)" to nearly all sources with air contaminant discharge permits. The PSEL rule requires a limit on total source emissions in accordance with source operations and air quality standards. While EPA does not have a comparable rule, EPA requires states to adopt rules which will ensure federal Clean Air Act provisions, which require states to have enforceable emission standards, are met. DEQ believes the PSEL rule is consistent with, and not more stringent than, this requirement. In addition, this rule allows the New Source Review and Prevention of Significant Deterioration delegated federal programs to be simplified in Oregon. [OAR 340-20-300 thru 320] *(Certainty, Efficiency, Performance Standard)*

- Oregon adopted the federal fine particulate standard (PM_{10}) standard and retained its existing total suspended particulate (TSP) standard whereas EPA deleted the TSP standard when it adopted the PM_{10} standard. [OAR 340-31-015] *(Predate, Health and Environment, Public Concern)*

- DEQ has adopted special requirements for significant sources in nonattainment areas (e.g. Klamath Falls, Medford, Grants Pass) as part of a strategy to meet and maintain air quality standards. [OAR 340-30-012 thru 230] *(Performance Standard, Prevention, Growth Margin)* This includes, for example:

  -- Requirements for emission standards for specific industrial source categories;

  -- A lower significant emission rate cutoff for review of new and modified sources of PM_{10}; and

  -- Requirements for compliance assurance such as continuous emission monitoring, and rules for indirect sources of carbon monoxide such as parking structures.

- Federal rules for non-attainment areas require the state to adopt a contingency plan that will automatically be implemented in the event that attainment strategies fail to achieve compliance with air quality standards by the federal deadline. Oregon's contingency plan (pursuant to statute) requires removal of the woodstove upon sale of the home as an emission source reduction measure. EPA has no specific requirement that would mandate this particular approach to meeting the contingency plan requirement. [OAR 340-24-200 thru 215] *(Performance Standard)*

- Some believe that DEQ rules regarding visibility are more stringent than federal requirements. DEQ believes its current rules fall short of fully meeting the Clean Air Act visibility protection goal of remedying any existing impairment. [OAR 340-20-047] *(Performance Standard)*

- DEQ has adopted statewide requirements as part of the general strategy to meet federal requirements for air quality standards, prevention of significant deterioration and visibility protection in attainment and nonattainment areas. *(Performance Standard, Prevention)* For example:

  -- A policy to require highest and best practical treatment and control was adopted to set a baseline requirement for control of all industrial emissions. While this standard has been partially superseded by specific federal technology standards, it still covers significant emission sources not addressed by those standards. DEQ has determined that this policy needs to be clarified and defined more precisely in light of the highly specific requirements of the federal Clean Air Act Amendments of 1990. [OAR 340-20-001]

  -- Statewide performance and emission standards were established for a number of specific industrial source categories to provide a minimum level of control throughout the state for particulate and volatile organic compounds. General process and fugitive emission standards were adopted to control emissions of particulate matter from other sources with no specific emission standards. [OAR 340-25-535 thru 805]

  -- Rules for open burning in urban areas and agricultural open burning in the Willamette Valley help control particulate, protect visibility and prevent nuisances. [OAR 340-26-001 thru 055, 340-23-022 thru 115]

  -- Sulfur content of fuels was also restricted to prevent exceedences of the federal sulfur dioxide standard. [OAR 340-22-005]

Water Quality

- Some may argue that selected water quality standards adopted by DEQ are more stringent than would be required by EPA. Some have suggested that Oregon's dissolved oxygen standard could be less stringent in some stream reaches and still protect resident aquatic life. Representatives of the Pulp and Paper industry have pointed to the fact that EPA has approved a less stringent standard for Dioxin in several other states as evidence that the Oregon's dioxin standard is unnecessarily stringent. (EPA recently promulgated standards for dioxin and other toxics for a number of states that failed to adopt standards. The EPA promulgated state standards were similar in stringency to Oregon's standards.)

EPA does not adopt national water quality standards. EPA publishes technical guidance which includes a summary of available technical literature. States are expected to use this guidance together with locally developed information on water quality and beneficial uses to develop standards which will assure protection of uses. Particular emphasis must be placed on standards to achieve the national goals of protection of aquatic life, and contact recreation (the fishable/swimmable goals). EPA guidance for toxics identifies health risk based numbers for three ranges of risk: 10^{-5}, 10^{-6}, and 10^{-7}. EPA recommends use of the 10^{-6} based numbers and will use those numbers if it is required to adopt standards because a state fails to act. The EPA Administrator can approve a less restrictive standard if a scientifically defensible case is presented and, following appropriate public involvement, the state demonstrates a willingness to subject its citizens to a greater level of risk.

State developed and adopted standards are then submitted to EPA for review and approval. Upon approval by EPA, the state standards become federally enforceable standards. Extraordinary justification is required by EPA to justify (1) approval of any standards that would allow a lowering of existing high quality water, or (2) relaxation of an existing approved standard.

Oregon's current standards were adopted in 1976, based on best available information and policy direction at that time. Standards have been updated on several occasions since, including adoption of standards for additional pollutant parameters. EPA requires states to periodically review standards (triennial review) and update them as appropriate. DEQ solicits comments on all standards during this process, and does an in depth evaluation on several standards that are deemed to be high priority for updating. Existing standards currently being reviewed by DEQ include dissolved oxygen, temperature, pH and bacteria. DEQ has established two advisory committees to assist in this review process; a policy committee and a technical committee. A subcommittee of the technical committee has been established for each of the standards being reviewed. [OAR Chapter 340, Division 41] *(Public Concerns, Prevention, Health and Environment)*

- In the Willamette Basin, Oregon has for two decades required wastewater dischargers to control discharges to a more stringent level than the federal minimum technology standards in order to meet water quality standards and provide a margin for growth of population and industry. Such requirements are more stringent than federal requirements to the extent that they provide a margin for growth. [Individual permit limitations] *(Performance Standard, Growth Accommodation)*

- 1976, Oregon's water quality rules were revised to include minimum design criteria for new or modified municipal waste treatment facilities that were more stringent than federal minimum technology requirements. These minimum design criteria were intended to protect existing high quality waters and assure

that growth and development could be accommodated without degradation of water quality. [OAR 340-41-215, 255, 295, 335, 375, 455, 495, 535, 575, 615, 655, 695, 735, 775, 815, 855, 895, 935, 975] *(Prevention, Growth Accommodation, Health and Environment)*

- Oregon water quality rules contain a number of policies that are intended to minimize or prevent water pollution. One policy requires that for new sources, alternatives which utilize reuse or disposal with no discharge to public waters be given highest priority for use wherever practicable. Another policy prohibits discharges to lakes without specific EQC approval. There is no federal counterpart for these requirements. [OAR 340-41-026(5) & (6)] *(Prevention)*

- Oregon's water quality rules contain a policy which requires existing sources to accommodate growth and development by increasing the efficiency of waste treatment and control so that existing assigned waste load limitations are not exceeded unless otherwise approved pursuant to specific criteria established by rule by the EQC. This rule was adopted to clearly notify existing sources of the need and opportunity to plan and manage their growth in a manner that would maintain existing water quality and compliance with water quality standards while growth occurred. There is no comparable federal requirement. Federal procedures would allow a source to expand using the established minimum technology standards. When the stream is found to be violating water quality standards, sources would be required to retrofit their facilities to achieve more stringent standards. [OAR 340-41-026(2) & (3)] *(Prevention, Growth Accommodation)*

- Oregon's establishment of a limit on AOX discharges from pulp mills is an example of a situation where federal standards do not currently address an environmental issue of concern to Oregonians. AOX is one of several surrogate parameters that seek to measure total chlorinated organics. EPA has published guidance for the states to consider in establishing a standard for a chlorinated organic compound commonly called dioxin. EPA has not addressed other chlorinated organic compounds, some of which are "known" or "probable" carcinogens. A review of available scientific information persuaded the Department that it was appropriate to establish an AOX limit in the pulp mill permits because technology used to control Dioxin could cause other chlorinated organics to increase. In addition, the public had expressed concerns on this issue. The goal of the permit limit was to require utilization of known and practicable technology to significantly reduce the level of chlorinated organic compounds in the mill discharges, not to force technology development. The Department believes it is appropriate to address issues such as this where available technical information suggests a need for concern, and EPA has for whatever reason not yet addressed the issue. Two pulp mills appealed the AOX permit limit, claiming that AOX is an inappropriate regulatory parameter, that the number is inappropriate, and that the technology

necessary to meet the limit is not demonstrated and practicable. Following contested case procedures, the Commission upheld the AOX permit provisions in the permits. Upon petition for reconsideration by the mills, the Commission agreed to reconsider the AOX provisions following submittal of preliminary operating data on newly installed control facilities. Thus, the AOX limit is effectively stayed pending completion of the reconsideration by the Commission. [Individual permit conditions] *(Health and Environment, Public Concerns)*

- Pulp mills argue that DEQ's permit requirments for monitoring of TCDD Dioxin discharges are more stringent than requirements of EPA or other states. Based on the current dioxin standard, EPA has established a Total Maximum Daily Load (TMDL) and Waste Load Allocation (WLA) for the major known contributors of dioxin to waters in the Columbia River Basin (pulp mills). The WLA divides the TMDL among the individual sources. The mass load allocation of dioxin for an individual mill, diluted in the total mill effluent, yields a concentration that is below the level of analytical detection. EPA has approved a monitoring approach that considers a mill to be in compliance with their waste load allocation if dioxin is "not detectable" in the total mill wastewater effluent after treatment. Under this approach, if the actual concentration was just below the detection limit, the wasteload allocation would actually be significantly exceeded. DEQ requires the mills to use a measuring and calculation process that more nearly approximates the actual discharge level of dioxin. Since the pulp bleach process is the process where dioxin is produced, DEQ requires measurement of dioxin in the bleach plant effluent (before dilution with other mill wastes). DEQ's approach requires measurement of dioxin levels removed from the process in sludge, allows for some degradation in the treatment system, and calculates an estimated discharge quantity based upon this information. [Individual permit condition] *(Public Concerns, Health and Environment)*

- DEQ has regulations for controlling discharges of wastewater into disposal wells. EPA has rules regulating the underground injection of wastewater which allow states to regulate underground injection by rule or by permit. DEQ rules require wastewater permits for some categories of injection and define requirements by rule for others. Where a permit is required, a Water Pollution Control Facilities (WPCF) Permit is issued. As with other DEQ permits, fees are required. These regulations are consistent with EPA regulations in those areas where EPA has specific regulations for underground injection. The DEQ regulations do cover some areas where EPA has not formulated regulations, and thus could be viewed as more stringent. [OAR Chapter 340, Division 44] *(Prevention)*

- Some suggest that the procedural and substantive requirements for controlling storm water exceed federally mandated requirements. DEQ does not believe that state requirements exceed federally mandated requirements to any

significant degree. DEQ has sought to streamline requirements such that they are less onerous than federal requirements. DEQ's application requirements require less data gathering than EPA's requirements. DEQ accepts grab samples for monitoring whereas EPA requires a more complex and costly monitoring approach using composite samples. DEQ has included discharge limiting conditions in permits for oil and grease, pH, and floating debris. These are deemed appropriate to assure compliance with water quality standards. Failure by EPA to include such limits in stormwater permits it issues does not relieve the permittee from responsibility for compliance with these water quality standards. [Federal requirements implemented by conditions included in general permits issued pursuant to general permit authority.] *(Efficiency, Certainty)*

In implementing the stormwater program, DEQ has identified some discharges of process wastewater that have not previously been permitted as required. An example of this is truck wash water. This is process waste rather than stormwater and is regulated differently. There may be some confusion, however, in relation to stormwater regulation since it was discharged to the stormwater system.

DEQ has also recently corrected an error in application of stormwater permit requirements for bulk petroleum facilities. DEQ was requiring permits from all bulk facilities whereas EPA requires permits only from bulk facilities which have vehicle maintenance shops or equipment cleaning operations. DEQ is now requiring permits consistent with the EPA requirements.

- DEQ has established a State Revolving Loan Fund (SRF) loan program to provide loans for sewerage works construction. This program replaces the old Federal grant program and is largely funded with federal funds. Some believe that the credit standard in DEQ's rule is more stringent in that it requires more security than the federal rules. DEQ does not agree with such an interpretation. [OAR 340-54-065] *(Certainty)*

- DEQ rules establish requirements for wastewater control in the Clear Lake Watershed near Florence in order to protect the groundwater aquifer and source of drinking water for the area. [OAR 340-41-270] *(Public Concerns, Prevention, Health and Environment)*

- DEQ has adopted rules to regulate the use of reclaimed water (treated effluent) from sewage treatment plants to assure protection of public health and the environment. These rules include standards for treated effluent quality when the treated effluent would be used for irrigation of food crops, golf courses, parks and for other uses. The rules also contain operational requirements to assure proper operation and accountability for the use of reclaimed water. There are no comparable federal statues or regulations that pertain to use of treated sewage effluent. [OAR Chapter 340, Division 55] *(Prevention)*

- Oregon has adopted rules to regulate land application and disposal of sewage sludge and septic tank sludge (septage). These rules were adopted in 1984 in order to help protect the state's natural resources and public health as well as promote the beneficial recycling (land application) of properly treated and managed sludges and septage. The rules establish soil loading limits for nutrients and other specified pollutants to protect groundwater and prevent cumulative buildup to harmful levels in the soil. Sludge management plans and written site authorization are required by DEQ rules. Federal rules were adopted in November 1992. Existing DEQ rules may be more stringent in some areas. DEQ, with assistance of an advisory committee, is currently reevaluating the state rules in light of the federal rules and will be proposing some changes. [OAR 340, Division 50] *(Predate, Prevention)*

Hazardous Waste

- DEQ rules requires annual reporting by all generators, TSDs (Treatment, Storage, and Disposal Facilities) and hazardous waste recycling facilities. EPA requires biennial reporting by large generators and TSDs only. (Such a requirement is part of a strategy to increase awareness of hazardous waste requirements and prevent problems from developing.) Also, the DEQ requires reporting of 28 more pieces of data than EPA does. Examples include location and contact information. DEQ rules require Small Quantity Hazardous Waste generators to complete a comprehensive manifest exception report; EPA requires less information in the report. [OAR 340-102-041] [OAR 340-102-044] *(Prevention)*

- DEQ rules require notification of any threat to health or environment. EPA requires notification only if the threat is outside the facility. DEQ also requires a more comprehensive report. [OAR 340-104-056] *(Prevention, Health and Environment, Public Concerns)*

- DEQ rules for reporting of spills of petroleum and hazardous substances require reporting of events that do not have to be reported under federal requirements. [OAR 340-108-020] *(Prevention, Health and Environment, Public Concerns)*

- DEQ rules allow fewer options for providing financial assurance for hazardous waste disposal facilities and are thus more stringent. When initially adopted, DEQ wanted to make sure that real dollars were available to address problems at disposal sites if needed. DEQ is in the process of changing this to allow additional options similar to the federal rules. [OAR 340-104-143] *(Certainty, Health and Environment)*

- DEQ rules require inclusion of expected closure costs in the closure and post closure plan for a hazardous waste pile; EPA does not. [OAR 340-104-258] *(Prevention)*

- DEQ rules do not allow hazardous waste incinerators to conduct trial burns under special permits; EPA does. [OAR 340-104-340] *(Public Concerns, Health and Environment)*

- DEQ rules do not allow surface impoundments to be used for hazardous waste disposal; EPA does. DEQ rules also require removal or treatment of all wastes in an impoundment at closure whereas EPA allows wastes to be solidified and left in place. However, if left in place, EPA rules require a 30 year post closure permit with groundwater monitoring, and if groundwater is already contaminated, cleanup would be required. DEQ's approach, while appearing more stringent, is intended to reduce the need to obtain a disposal site permit (a difficult process) and conduct long term post closure care and monitoring at the site. [OAR 340-104-228] *(Certainty, Public Concerns)*

- DEQ rules require fully regulated hazardous waste generators to provide secondary containment if storing hazardous waste in tanks or in more than 100 containers; EPA does not. [OAR 340-102-034] *(Prevention, Health and Environment)*

- DEQ rules provide that unsaturated zone monitoring may be required at any hazardous waste facility; EPA requires it only at land treatment sites. [OAR 340-104-029] *(Prevention)*

Solid Waste

- New EPA rules for municipal solid waste landfills, adopted in October 1991, impose design and operational standards as well as performance standards on municipal landfills. The new federal rules also expect states to have an enforcement mechanism, such as a permit program, to regulate municipal solid waste landfills. Proposed new and amended Solid Waste Disposal regulations were adopted by the EQC on March 5, 1993. These rules address the new federal rules for municipal landfills, and are more stringent than federal rules in the following areas:

  -- **Applicability:** The definition of "municipal solid waste landfill" in the proposed DEQ rules is broader than the federal definition. It includes any facility receiving domestic, commercial or institutional waste. The federal definition refers to a facility receiving waste "generated by households." [OAR 340-93-030(28) & (54)] *(Equity, Prevention, Health and Environment)*

  -- **Location:** The proposed DEQ rules provide that new landfills may not be sited in gravel pits or wellhead protection areas where there are findings that there is risk of groundwater pollution. There is no similar federal restriction. [OAR 340-94-030(4), 340-95-010(4)] *(Health and Environment, Prevention, Certainty)*

-- **Design:** The proposed rules allow the Department to require, where site-specific conditions warrant, new municipal solid waste landfills to provide additional protection to protect groundwater or to afford enhanced monitoring beyond the federal requirement for a single composite liner requirement. [OAR 340-94-060(6)] *(Prevention, Health and Environment)*

-- **Operations:**

- Special management procedures are required for some solid wastes, which must be included in a Special Waste Management Plan. Examples include isolation and special handling of "sharps" or infectious waste, special handling of asbestos, additional requirements for compaction of yard debris if handled in large quantities, etc. There are no Federal special management procedures. [OAR 340-93-190, 340-94-040(1), 340-95-020(3)] *(Public Concerns, Prevention, Health and Environment)*

- The proposed rule specifies that only those solid wastes specifically allowed in the permit may be received. Application must be made to DEQ to accept additional wastes. There is no Federal counterpart. [OAR 340-94-040(11)(a), 340-95-020(2)] *(Prevention)*

There are no federal requirements similar to these.

- Existing DEQ solid waste rules are more specific than the new federal rules in a number of areas, such as information required for a permit application, a site feasibility study, operational requirements, some procedures such as split samples for groundwater monitoring, and procedures for updates and modifications to approved closure plans. These requirements may be viewed as more stringent. [OAR 340-93-070, 340-93-130, 340-94-080(2), 340-94-110(3), 340-95-040(2), 340-95-060(3)] *(Prevention)*

- The DEQ Solid Waste Program implements at landfill sites the groundwater quality standards established under the Oregon Groundwater Protection Act (ORS 468B.150 et.seq.). These standards include an anti-degradation policy and other specifics which may be viewed as more stringent than EPA landfill related criteria which relate primarily to drinking water maximum contaminant levels. [OAR 340-94-080(1)(a), 340-95-040(1)(a)] *(Prevention)*

Underground Storage Tanks

- DEQ's definition of "Residential tank" (which defines who is regulated) is limited to tanks located at a single family dwelling; thus allowing fewer tanks

to be exempted from the UST regulations. EPA definition includes tanks on any property used for dwelling purposes; thus includes any residential unit such as nursing homes and apartments. [OAR 340-150-003] *(Prevention, Health and Environment)*

- DEQ has adopted the extensive federal regulations on underground storage tanks by reference with a few specific exceptions which may be considered more stringent to address state concerns for pollution prevention, protection of health and environment, establishment of greater certainty for the regulated community, or to provide greater efficiency. State exceptions require additional reporting and notification, better tank corrosion protection evaluation and monitoring, specific tank certification procedures, qualified leak detection design, site assessment prior to and during tank closure. [OAR 340-150-003] *(Prevention, Health and Environment, Efficiency, Certainty)*

  Some claim that DEQ rules require more cathodic protection for lined tanks than is required by EPA. This is not the case. DEQ's draft rule proposal that went to hearing in 1990 **did** contain language requiring lined tanks to be cathodically protected. After receiving comments and subsequently discussing the comments with the UST Advisory Committee, the rule language on upgrading tanks by lining **was changed** to read identical to EPA regulations.

State Superfund (Environmental Cleanup)

- EQC's primary cleanup standard for releases of hazardous substances is "background or lowest feasible concentration". This standard was adopted by the EQC with a nearly unanimous recommendation from a broadbased Advisory Committee that included representatives from industry. EPA does not require a responsible party to address whether technologies will clean the site to "background". However, both federal and state standards require that, to the maximum extent possible, cleanups use permanent solutions and that they be effective, cost-effective, and implementable. Under state requirements, background chemical values are used as standards for cleanups only when cleanup to background is feasible. This component of Oregon's environmental cleanup program is interpreted by most as being more stringent than federal requirements when in fact it is not in most cases. [OAR 340-122-040 & 045] *(Health and Environment)*

- DEQ has established numeric cleanup standards for releases of petroleum from underground storage tanks (soil and groundwater) and for hazardous substance releases at simple sites (soil). EPA has adopted no comparable numeric standards. DEQ numeric standards were enacted to help streamline the (federal) underground storage tank and (state) environmental cleanup processes by providing an alternative to a case-by-case cleanup level determination and hence an expedited cleanup option. However, it is possible that DEQ's numeric standards could be more stringent, depending on site specific

conditions. In this case, the responsible party has the option to do the site-specific assessment and thereby move back to the process that is parallel to the federal program requirements. [OAR 340-122-045, 340-122-205 through 260] *(Certainty, Efficiency)*

- Utilities have expressed a concern that the DEQ numeric soil cleanup level for PCBs is established at 0.08 mg/kg whereas EPA's spill response cleanup level is 10 mg/kg. The DEQ soil cleanup number of 0.08 mg/kg was based on a risk analysis using best available scientific data. The DEQ numeric soil cleanup level is optional, not required. If a responsible party feels the numeric soil cleanup level would be to their disadvantage, they have the option of going through the process to develop a site-specific cleanup plan and cleanup level. State cleanup levels may be used for both contemporary spills and past practices, while EPA's PCB spill cleanup policy only applies to contemporary spills. EPA's policy also requires a clean cover (at least 10 inches of clean soil), while DEQ's optional numeric cleanup levels are based on residual concentrations without such additional controls. [OAR 340-122-045] *(Certainty, Efficiency, Health and Environment, Equity)*

March 31, 1993

DRAFT

Consolidated Application Processing Procedures

Newmont Grassy Mountain Corporation Proposal

April 19, 1993

Who	What	When	Comment
Pre-Application Phase			
Applicant	Submit "Notice of Intent to Submit Consolidated Application" (NOI) to DOGAMI	When ready	NOI must include Name and location of the proposed operation, name and address of prospective applicant, and brief description of the proposed mining operation.
Applicant	Post notices along the boundary of the proposed permit area	Within 10 days after submitting NOI	
DOGAMI	• Issue **Public Notice** • Activate Project Coordinating Committee • Activate Technical Review Team • Provide names of cooperating agency participants to applicant	Upon receipt of NOI	See Note at the end of this table for a Description of the **Public Notice** process.
PUBLIC	Opportunity to request to be on the "Master List" to receive all public notices regarding proposed mine	At any time, but likely to occur as a response to the initial notice.	$5 must be paid to DOGAMI for each address requested to be placed on the Master List to help defray the cost of mailings.
Applicant	Notify DOGAMI of readiness to collect baseline data	When ready.	Notification includes workplan for data collection (methodologies, area, timing, etc.)
Technical Review Team	• Reviews work plan for baseline data collection to determine accuracy. • Determines the study areas for a proposed mine. • Requests and receives additional information as needed. • Approves methodology to be used in collection of baseline data • Coordinates with the applicant the collection and verification of baseline data.	As soon as practicable after receipt of work plan (consistent with deadlines).	Public Notice may be required for Technical Review Team meetings since they are leading to a decision.

Who	What	When	Comment
DOGAMI	• Issue **Public Notice** • Conduct **Public Informational Meeting** near site • Conduct **Public Informational Meeting** in State population center • Receive written comments	Upon Receipt of Notice Within 30 days of Receipt of Notice Within 30 days of Receipt of Notice for 45 days from Receipt of Notice	
PUBLIC	• Attend **Public Informational Meeting** • Submit Written Comments to DOGAMI	Submit within 45 days of DOGAMI's receipt of notice.	comments should address issues raised by the mine proposal and information relevant to characterization of the pre-mine environment.
Application Phase			
Applicant	Submit Consolidated Application to DOGAMI	When ready	Application must include the following: • General Information • Existing Environment - Baseline Data • Operating Plan • Reclamation and Closure Plan • Alternatives Analysis • All additional information required by law or rule of each permitting agency
DOGAMI	Provide Application copy to each permitting agency, cooperating agency, and affected federal and local agency	Within 10 days of receipt of application	
Technical Review Team	• Reviews application to determine completeness • requests and receives additional information as needed (an implied step) • Makes "preliminary" determination that application is complete and agencies are ready to begin permit drafting	As soon as practicable after receipt of application (consistent with deadline and subsequent steps for determining that application is complete)	Public Notice may be required for Technical Review Team meetings since they are leading to a decision.

Who	What	When	Comment
DOGAMI	• Issue **Public Notice** of (1) Receipt of Application and preliminary determination that application appears complete, and (2) **Public Hearing and Comment Period** on whether the application is complete.		
DOGAMI	• Request additional information from applicant if needed (based on detailed public comments). • Upon receipt of additional information requested, give **Public Notice** of 14 day opportunity for written comment		If applicant is not required to submit additional information as suggested in public comments, agencies must prepare written response explaining why additional information was not requested.
DOGAMI and Agencies	Determine that Application is Complete (includes verification of baseline data)	Within 90 days of receipt of application	
DOGAMI	Issue NOTICE TO PROCEED (assumption is that this notice goes to the applicant and the permitting agencies)	Upon determination that Application is complete	This starts the process for detailed application evaluation and the development of draft permits.
DOGAMI	If new information becomes available or is needed (and received), give appropriate **Public Notice** and hold a **Public Hearing** within 14 days of receipt of the additional information	As needed after Notice to Proceed is issued.	
Technical Review Team	• Determines the scope of the Environmental Evaluation. • Identifies alternatives not analyzed by the applicant. • Directs analysis of such alternatives. • Consults with Project Coordinating Committee on the Environmental Evaluation.	Upon issuance of Notice to Proceed	Public Notice may be required for Technical Review Team meetings since they are leading to a decision.
DOGAMI	• Contract for preparation of an **Environmental Evaluation** (impact analysis, cumulative impact analysis, alternatives analysis) • Contract for preparation of a **Socioeconomic Impact Analysis**	Upon issuance of notice to proceed Upon issuance of notice to proceed	

Who	What	When	Comment
Contractors	• Prepare Environmental Evaluation and submits to DOGAMI • Prepare Socioeconomic Impact Analysis	Pursuant to contract schedule	Environmental Analysis must be completed at least 60 days before issuance of draft permits.
DOGAMI	• Issue **Public Notice** of receipt of Environmental Evaluation • Receives Comments • Distributes Socioeconomic Impact Analysis to local governments in the area and affected agencies	• Upon receipt of Environmental Evaluation • for 14 days after notice • Upon receipt of Socioeconomic Impact Analysis	
Cooperating Agencies	• Submit to DOGAMI proposed conditions for incorporation in Draft Operating Permit • Submit written concurrence with conditions of Draft Operating Permit	As appropriate At least 30 days before issuance of draft permit	DOGAMI issues the Operating Permit. A Cooperating Agency submittal must pertain to its statutory authority. DOGAMI must include cooperating agency conditions in the Operating Permit.
Permitting Agencies	Submit draft permit (or permit denial document) to DOGAMI	Within 225 days of Notice to Proceed; and not sooner than 60 days after receipt of Environmental Evaluation	Each permitting agency must include explanation of anything inconsistent with Environmental Evaluation.
DOGAMI	Check for conflicts between permits (as result of conditions imposed by a cooperating agency)	Upon receipt of all draft permits	(rules only refer to conflicts between permits resulting from a condition imposed by a "cooperating agency" -- logic would suggest that the check for conflicts should be broader)
Technical Review Team	Resolve any conflicts between draft permits		Public Notice may be required for Technical Review Team meetings since they are leading to a decision.
DOGAMI	Issue **Public Notice** of the date and location of a consolidated hearing and the period for written comments on all permits	Within 15 days after receipt of all Draft Permits	
DOGAMI and all Permit Agencies	Conduct Consolidated Hearing	Between 45 and 60 days after public notice is issued	

Who	What	When	Comment
Cooperating Agencies	• Submit to DOGAMI proposed conditions for incorporation in Operating Permit • Submit written concurrence with conditions of Operating Permit	As appropriate At least 7 days before issuance of final operating permit	A Cooperating Agency submittal must pertain to its statutory authority. DOGAMI must include cooperating agency conditions in the Operating Permit.
Permitting Agencies	• Evaluate testimony received at consolidated hearing and in writing • Submit draft Final Permit to DOGAMI		(This step is not specified in rules, but it appears necessary to permit potential conflict resolution prior to permit issuance,)
DOGAMI	Check for conflicts between permits (as result of conditions imposed by a cooperating agency)	Upon receipt of all draft permits	(rules only refer to conflicts between permits resulting from a condition imposed by a "cooperating agency" -- logic would suggest that the check for conflicts should be broader)
Technical Review Team	Resolve any conflicts between draft permits		Public Notice may be required for Technical Review Team meetings since they are leading to a decision.
DOGAMI	• Determine amount of financial security required in accordance with OAR 340-37-135 (reclamation bond or approved alternative security) adequate to allow DOGAMI tomeet the requirements of the reclamation and closure pland and to provide protection of surface and subsurface resources. • Secure financial security. • Notify permit agencies that security is on file and that permits may be issued.	Prior to permit issuance and start of mine operations.	
Permitting Agencies	• Issue permit (or otherwise take final action on application) • Notify DOGAMI of permit issuance	Within 45 days of Consolidated Hearing (or sooner if required by federal law) and within 1 year of issuance of Notice to Proceed	With concurrence of the applicant, the processing of the application may be suspended for a period of time to permit resolution of outstanding issues.
DOGAMI	Issue **Public Notice** of the issuance of final permits	Upon issuance of permits	

Who	What	When	Comment
Appeals			
Applicant or Qualifying Person	File a written request for a consolidated contested case hearing	Within 30 days after permit was granted or denied	Request must state reasons for requesting hearing and objections to permitting agency's actions.
DOGAMI	Schedule Consolidate Contested Case Hearing	Hearing must be held between 60 and 75 days after permit issuance or denial	Permits are suspended until completion of Consolidated Contested Case Hearing.
Permitting Agencies	Appoint Hearings Officer to participate in the Consolidated Contested Case Hearing (or agree to use the Chief Hearings Officer appointed by DOGAMI)		
Permitting Agencies	Make final disposition of appeal of their permit by issuance of a final order in accordance with their procedures based upon Consolidate Contested Case record and recommendations of Hearings Officer.	As soon as reasonable after hearing	Further appeal of permits is to the Supreme Court within 60 days following entry of an order in the Contested Case. Permit is stayed for 6 months pending Judicial Review (unless exception is granted).

Notes:

Public Notice Process:

- Mail notice to all permitting agencies, cooperating agencies,and affected federal and local agencies.
- Mail notice to each owner of property located within 1/2 mile of the proposed "permit area".
- Mail notice to all unpatented mineral claimants located within 1/2 mile of the proposed "permit area".
- Mail notice to persons on the "Master List".
- Publish notice in one "statewide" and one "local" general circulation newspaper once per week for two weeks immediately preceeding an action requiring notice.

The "Master List"

This list is comprised of persons who request to be on the list and pay $5 to help defray the cost of mailings. Initially, permitting and cooperating agencies are to provide a list of persons who have expressed interest in a proposed chemical process mine to DOGAMI. It is assumed that persons who receive the first mailing and elect not to pay the $5 will be removed from the list. Persons can be added at any time through the process by making a request and paying the $5.

State of Oregon
Department of Environmental Quality Memorandum

Date: April 22, 1993

To: Environmental Quality Commission

From: Fred Hansen

Subject: Pope & Talbot NPDES Permit Renewal

The NPDES permit for the Pope & Talbot pulp mill in Halsey expired on December 31, 1992. The company applied for renewal of the permit and the Department is close to a decision on a final permit.

As part of the permit renewal process, two information meetings and two formal hearings were held during the public participation period. As a result of the meetings and hearings nearly 300 comments were received regarding the proposed permit renewal. Department staff have read each comment and have developed a list of 33 issues. The Department is currently in the process of preparing a report addressing each of these issues and making recommendations for final modifications to the draft permit. This process will involve all levels of the Department and may require a few weeks or more. A final decision on the renewal permit will likely be made by mid to late May.

I have attached a copy of the hearings officer report for your information. The report identifies all of the major issues brought out during the two formal hearings and during the written comment period.

Tim McFetridge in our Willamette Valley Region is the lead staff person working on this permit renewal. If you have any questions regarding specific details on the matter, please feel free to give Tim a call at 378-8240.

Attachment

State of Oregon
Department of Environmental Quality Memorandum

Date: April 13, 1993

To: Pope and Talbot NPDES Permit Renewal Files, Application No. 997246, Pope and Talbot Halsey Mill, Linn County, Oregon.

From: Gary Messer RS, Hearings Officer

Subject: Hearing Officer Report on Issues Raised during the Public Hearings conducted on March 15 and 16, 1993, and the Written Comment Period which ended on March 23, 1993.

OVERVIEW AND SUMMARY STATEMENTS

In response to the public hearing process extensive oral and written comments were received in regard to this proposed permit action. Testimony was provided from numerous citizens, elected officials, businesses, labor organizations, municipalities, public officials and agencies, charitable organizations, and environmental organizations. Testimony was received from a wide geographic area beyond the local area of the mill including submittals from some businesses and citizens from the State of Washington, Portland, all of the Willamette Valley Counties, and Lincoln County. The majority of testimony was received from Linn and Benton County residents.

Testimony received expressed numerous and varied views ranging from outright support for reissuance of the permit with no permit modifications to extreme opposition with opinions expressed that DEQ could not, or should not, legally reissue the permit. Between these view points, significant testimony was submitted requesting and/or suggesting that the permit, as drafted, needed to be modified to address both environmental and health concerns in regard to the various beneficial uses of the Willamette River and as it relates to being the domestic water supply for the City of Corvallis.

Because of the volume of testimony provided, it was not practical to include and/or restate every testifiers comments in this summary report specifically as submitted. All testimony, both oral and written, was reviewed and given equal weighing in identifying the major issues brought out that were of concern to the majority of testifiers requesting or suggesting permit modifications.

COMMENTS RECEIVED THAT WENT BEYOND SCOPE OF THIS INDIVIDUAL PERMIT ACTION

Several of the major issues of concern went beyond the scope of this individual permit action. Because these were repeatedly brought up as issues of public concern, they are identified below so the Department is aware of these issues and the likelihood they may resurface at future permit actions. Accordingly, the Department should consider these views as program needs, new policy and/or rules are being reviewed in the future. The issues falling in this category were:

1. Industrial wastewater permittees should be bound to the same permitting, treatment, and load standards as are applicable to municipal wastewater permittees. Because current federal standards generally provide industrial dischargers with higher load allowances, concerns exist that municipalities will be required to expend more than their share of the costs to maintain and improve receiving water conditions when the primary cause of impact can be related to the high allowable loads being discharged by industrial sources. Comments were also made that industrial discharges have no requirements to address long range planning needs or to manage their treatment process sludges as is required of municipalities and similar requirements are needed.

2. Oregon needs to implement a more aggressive policy to reduce, reuse, and ultimately eliminate discharges to public waters. Because current rules only have additional requirements when increased discharges or stream degradation is involved, there is no incentive for dischargers to reduce or eliminate their current discharges.

3. DEQ's administrative rules in regards to color, odor, general nuisance or aesthetic impacts are subjective and do not provide adequate controls for obvious impacts. Specific measurable standards should be adopted for these parameters and included in permits so they will be regulated.

4. EPA's and DEQ's reliance on self-monitoring of the permittee's production records, treatment processes and discharges to verify permit compliance provides suspect data. Accordingly, DEQ staff, or independent 3rd party sampling should be required to ensure submission of unbiased data and all permit limits are being achieved.

5. Because of all the unknown chemicals that may be contained in industrial wastewater discharges, EPA's and DEQ's

monitoring requirements are not adequate to ensure public health needs are being met. Accordingly, monitoring parameters need to be expanded to include embryo and human tissue cultures to verify discharges are not having either short or long term impacts to those who live by or use the receiving waters for beneficial purposes.

COMMENTS RECEIVED FALLING WITHIN THE SCOPE OF THIS PROPOSED PERMIT ACTION

The follow is a summary of views that related specifically to this proposed permit action. It needs to be stated that there was significant testimony provided in support of reissuance of the permit as drafted with no modifications. Accordingly, this support viewpoint was noted; however, since no permit modifications were suggested there is no items of discussion for those offering this view. There was also a moderate level of views expressed that the permit simply should not be reissued because of water quality impacts, but no specific discussion other than to voice opposition to the proposed permit renewal. Accordingly, this non-supportive viewpoint for reissuance of the permit was noted.

The following views; however, represent those most commonly expressed in regards for specifically requested permit modifications. These views are summarized in the order and permit schedules they would applicable to in the proposed draft permit.

General Issues/Views

1. Before final action is taken, this proposed permit action should be reviewed by the Oregon Environmental Quality Commission (EQC) to ensure DEQ has addressed all environmental and public health concerns.

2. This permit action should be delayed until the Willamette River Basin Study is completed and EPA's new Drinking Water Standards are adopted so more complete data will be available to base permit limits and conditions upon.

Schedule A- Waste Disposal Limitation Issues/Views

3. The overall limitations of Schedule A do not provide limits that are protective of general water quality, aquatic life, recognized beneficial uses associated with recreation and aesthetic values, nor do they provide adequate safeguards to the City of Corvallis' drinking water supply in regards to odors, taste, and THM formation potentials.

4. Based on the current production levels, past monitoring data, river flow conditions, and the removal of the James River Paper wastewaters from the Pope & Talbot wastewater system, the proposed BOD and TSS limits should be significantly reduced, different BOD and TSS discharge load limits established for winter and summer periods, and the summer period be redefined to be from May 1 through October 31.

5. BOD and TSS load limits should be established based upon the current loads actually being discharged as that is representative of the current mill's production of 550 ADMT/Day of pulp production and is accommodative of current needs. If mill efficiencies allow for expanded pulp productions without expansion of existing facilities, these increased productions must still be accommodated within the established BOD and TSS loads that are actually being discharged at this time.

6. pH limits in the permit should be consistent to match the Willamette Basin Standard of 6.5 to 8.5 range specified in OAR's.

7. The proposed color limit in the permit is not adequate to prevent aesthetic or nuisance conditions in violation of Willamette Basin Standards. A specific color limitation is needed so that the color at the end of the mixing zone does not exceed 5 color units more than that of the river immediately upstream of the discharge into the river.

8. The proposed TCDD limits in the permit are based on an annual average discharge of 0.3mg/day into the river and do not take into account the low river flow conditions that occur during the summer months. Accordingly, TCDD limits should be based upon river flow conditions and lowered during the summer periods.

9. The proposed permit should establish a specific AOX limitation.

10. The proposed permit should establish a specific THM formation potential limitation.

Schedule B- Minimum Monitoring and Reporting Requirement Issues/Views

11. The proposed permit should require routine flow meter calibration and checks to ensure accurate flow data is being reported.

12. The permit should require effluent monitoring for NH3-N, N03 & N02-N, TKN, and Total Phosphorus during the summer discharge periods.

13. The permit should require at least quarterly bioassay studies with one or more conducted during the summer low river flow periods.

14. The permit should require expanded monitoring of the sludge generated by the wastewater control facilities to include Total Solids, Volatile Solids, metals, pH, Nitrogen species, Potassium, Phosphorus, TCDD and TCDF, amounts and locations of sludges applied.

15. The permit should require weekly monitoring of Chloroform.

Schedule C- Compliance Conditions and Schedule Issues/Views

16. The permit should establish a compliance date for Pope & Talbot to conduct a study on alternatives for additional color and odor removal alternatives, above and beyond the improvements projected by the new Oxygen Delignification process. The permit should further establish a specific compliance date to have the best alternative and facilities for color and odor reduction in operation.

17. The permit should establish a compliance date upon which Pope & Talbot must have achieved control of color impacts from their discharge so that the color at the mixing zone boundary will not be greater than 5 color units greater that the river water immediately upstream of the discharge point.

18. The permit should establish a compliance date upon which Pope & Talbot must submit a comprehensive evaluation of treatment and disposal alternatives beyond their current aerated lagoon technology that would significantly reduce or eliminate current loads and/or discharges to the river.

19. The permit should establish a compliance date upon which Pope & Talbot must submit a Sludge Management Plan for both their domestic and industrial wastewater sludges, prepared in a manner similar to that required of Municipal sewerage system permittees.

20. The permit should establish a compliance date upon which Pope & Talbot must complete a study that will conclusively show if there is any correlation between their wastewater discharges of AOX and the creation of THM formation

potentials.

Schedule D- Special Condition Issues/Views

21. The permit should specifically establish a production cap of 550 ADMT/Day of pulp on an annual average, and this level could not be exceeded for any reason without first obtaining a permit modification that would first require reopening of the public review and hearing process.

22. The permit should contain a reopener clause that mandates review and modification of permit limits in the event technical studies ongoing by either DEQ, or the joint studies in process between Pope & Talbot, James River and the City of Corvallis, show that either Pope & Talbot's discharge or the combined discharge of Pope & Talbot and James River is causing any deleterious impacts on the City of Corvallis' domestic water supply.

23. The permit should require Pope & Talbot to submit a 20 year plan, similar to Facility Plans required of Municipalities, that will identify how their wastewater control facilities will be planned and upgraded so that their discharges, when combined with other currently existing and projected new discharges from future growth in the Willamette Valley will not use up the assimilative capacity of the river at the cost of others. (Hearings Officer Note: The comments expressed in this issue relate to concerns that if Pope & Talbot's permit does not contain requirements to continually improve the quality of their effluent, then they will have no incentive to do so. Accordingly, future residents and industries that will need to rely on the Willamette River to accommodate treated wastewater discharges will be held to more stringent treatment standards because the Pope & Talbot has already received a previously approved allotment of the load).

24. The permit should establish specific sludge elevation/accumulation limits in the various wastewater treatment components of the permittee's system to ensure waste sludge removal is accomplished periodically to prevent solids carryover into the discharge and to ensure all treatment components are operating as efficiently as possible.

25. The permit should establish a requirement for Pope & Talbot to conduct a comprehensive aquatic wildlife study in cooperation with the Department of Fish and Wildlife to

verify that no critical habitat or endangered species are being impacted by the permittee's discharge.

Hearings Officer Recommendations

1. The Environmental Quality Commission members should be updated on this permit action and updated on the current issues of concern in regards to both issues that fell outside the scope of this permit action as well as those that were pertinent to this permit action.

2. The issues identified above that fell outside the scope of this individual permit action should be called to the attention of the Department of Environmental Quality's Water Quality Division Administrator and the Department's Director so they are informed of the general concerns that exist with issuance of water quality discharge permits in Oregon. These comments represent repeated testimony and provide good insight to the Department on public sentiment as existing rules, policies and water quality needs are reviewed.

3. DEQ technical staff needs to reevaluate each of the above issues that were identified as relating specifically to this permit action. Technical staff should then determine where new information was provided that would support modifications within the bounds of current federal and state rules and regulations that govern the issuance of NPDES permits with wastewater discharges into the Willamette River. If requested modifications are found that can be supported by rule, these should be accomodated unless they are the subject of a prior EQC action that has authority to grant variances or exceptions. Where these situations might be encountered, technical staff needs to clearly identify this so there is no perception that DEQ is not addressing issues required in state rules. For those issues that are not specifically or clearly defined by existing rules, DEQ staff are encouraged to bring these concerns to the attention of Pope and Talbot to see where room may exist to accommodate public concerns, but not necessarily within the context of a permit condition.

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STATUS OF RIVERBEND LANDFILL
AND
ITS PENDING APPLICATION TO DEQ FOR A REGIONAL LANDFILL
PERMIT

THIS IS A VERY BRIEF SYNOPSIS of our problems with the Yamhill County Board of Commissioners, the Department of Environmental Quality (DEQ) and Riverbend Landfill Company (RLC).

On February 6, 1980, the Yamhill County Board of Commissioners granted a franchise to RLC for a solid waste disposal facility to accommodate the central and southern portions of Yamhill County - mainly McMinnville, Amity and Sheridan. The franchise expires in the year 2003. The landfill is located on a 229 acre parcel of prime farm land, privately owned and leased to RLC, approximately 2 miles southwest of McMinnville. It is bordered by the South Yamhill River on the east and Highway 18 (main route to the Lincoln beaches) on the west.

Our Board of Commissioners immediately shrugged off any responsibility for the landfill other than to regulate rates. They rely fully on DEQ to enforce all other rules and regulations.

DEQ issued Permit #345 which expired January 31, 1992. On annual, sometimes semi-annual, visits to the landfill site, DEQ occasionally called attention to infractions, such as too much exposed garbage or incorrect placement and condition of the monitoring wells. Upon request of the operator, DEQ would promptly amend the permit to conform to the operation instead of requiring the operation to conform to the permit. THE LANDFILL IS BASICALLY SELF-MONITORED - NO ENFORCEMENT!

Over the years, the operator began importing garbage from other areas. It now receives all of Yamhill County's waste, all of Astoria, Seaside and Geahart's garbage, and garbage from Columbia, Clackamas, Washington and Multnomah Counties. Trucks from Canada and Puget Sound have been observed unloading garbage at the site. While gates are usually locked around 6:00 p.m., trucks unload all hours of the night, which would indicate that some of the haulers have gate keys.

In 1992 RLC reported 76,638 tons of Yamhill County garbage deposited at the landfill and 118,047 tons of out-of-county garbage, a total of

194,685 tons - a far cry from the original permit projection of 63,000 tons per year. A "regional" landfill is one that imports over 75,000 tons of out-of-county garbage a year.

In December, 1991, while RLC's application for a renewal of its DEQ permit was (and still is) pending, the local operator sold the operation to Sanifill, a Texas based corporation on the New York Stock Exchange.

In May of 1992, the citizens of Yamhill County overwhelmingly passed a measure on a petition initiated by CAP members to limit the out-of-county garbage to 25% of that generated and disposed of by Yamhill County at the dump. RLC appealed to LUBA which ruled that to limit the importation of garbage violated interstate commerce laws. Other parts of the measure were remanded to the local court, and no further action has been taken. This does not, however, alter the fact that the citizens of Yamhill County are adverse to hosting a regional landfill on such a fragile site, and we do have a right to protect our river and the aquifer that is the sole source of area wells. We feel it is DEQ's obligation to afford us this protection.

Citizens of Yamhill County are justifiably concerned that they will eventually be called upon for remediation. Riverbend Landfill Company carries no environmental impairment insurance. MONITORING WELLS ARE ALREADY SHOWING CONTAMINATION. The landfill is on the floodplain and floodway of the river directly over the most important and most used aquifer west of the Cascades. THIS IS NOT AN ISOLATED AREA, but a thriving farming community.

THERE IS NO DEMONSTRATED NEED FOR A REGIONAL DUMP AT THIS SENSITIVE SITE. Other counties and states have access ~~have access~~ to Roosevelt and Arlington landfills which are already equipped and permitted as regional landfills in areas much more suitable: Where the site contains thousands acres, instead of 229 acres; where the natural clay liner is 340 feet, instead of 15 to 21 feet; where the annual rainfall is 6 to 9 inches, instead of 40 to 60 inches; where cover material is plentiful, instead of shredded

tires; where methane burners are in place for gases, instead of being released into the atmosphere; where leachate can be controlled, instead of sprayed, untreated, onto agricultural lands; WHERE ENVIRONMENTAL IMPAIRMENT IS REMOTE, INSTEAD OF IMMINENT.

Riverbend has been able to underbid other landfills in soliciting garbage business because DEQ has allowed RLC to operate as a regional landfill for years without required safeguards.

RLC's application for a "renewal" permit is definitely an EXPANSION in area, volume and height of what was originally approved and permitted by DEQ in 1981. The fact that DEQ allowed RLC to operate a "regional" landfill for at least three years under the guise of a local facility does not obligate DEQ to now license RLC to continue to do so by simply requiring that RLC conform at some future date to the statutes, rules and regulations pertaining to regional landfills. A copy of DEQ's March 25, 1991, letter to RLC, submitted herewith, will give you some idea as to the scope of expansion and deviation from the original permit. The site has not been re-evaluated for such an expansion, and the exceptions to state and county goals as set forth in the zone change application should be re-addressed.

THE CITIZENS OF YAMHILL COUNTY WANT THE LANDFILL RETURNED TO THE LOCAL FACILITY FOR WHICH IT WAS FRANCHISED AND PERMITTED, AND THEY WANT THE HEIGHT RESTORED TO THE ORIGINAL ELEVATION OF 157 FEET, BEING THE UPPER TERRACE OF THE FLOODPLAIN.

Recognizing that DEQ must process applications for landfills and EXPANSIONS of landfills, we cite OAR 340-61-026 which states: Upon receipt of a completed application, the Department shall deny the permit if: * * * * (5) There is no clearly demonstrated need for the proposed new, modified or expanded disposal site or for the proposed change in the method or type of disposal."

DEQ is the primary watchdog agency that the citizens of Oregon have to rely upon for protection from the environmental hazards precipitated by businesses. This is an important trust and responsibility. Correspondence between DEQ and Riverbend appears to be considering this very leniently and in favor of the landfill. While we hope this is not the case, the intent to go forward with a permit process, given existing environmental contamination is disturbingly inconsistent with the role of citizen protection from environmental contamination that DEQ has been entrusted with. It is also inconsistent with Oregon's commitment to preserve farm land!

During the last several years DEQ has encouraged many landfills along the Coast Range to close through policy interpretations and in some cases, stipulated orders. This general DEQ direction has been described by DEQ staff as an important recognition of best management practices that would encourage landfilling east of the Cascades in dry climate landfills. In several cases DEQ has indicated that landfills wishing to remain open must embark upon costly geological characterizations designed to demonstrate, beyond a shadow of a doubt, that potential for environmental contamination does not exist in order to be re-permitted. In many cases this pressure from DEQ staff has succeeded in persuading the landfill owners to close rather that apply for permit renewals even though there is no documented evidence of off-site groundwater contamination. It would appear that the intent to issue a new permit to Riverbend Landfill, given their documented contamination, is inconsistent with DEQ's position that has been taken with other Coast Range landfills such as Agate Beach.

On March 9, 1993, DEQ accepted the Remedial Investigation Plan presented by RLC and required that the remedial investigation report be submitted within six months. This means that in six months DEQ will have ate available that <u>may</u> provide the information necessary to begin to design a remediation approach that will clean up the existing contamination and prevent further contamination.

In a very conservative review of time frames, this means that it will probably be at least one year before RLC can begin construction on an approved remediation design. During that year the potential for continued contamination will persist. The only solid activities that are planned in the next year to immediately begin to deal with preventing the spread of contamination is to conduct a survey to determine where the contamination will go and how bad it will be.

Given the history of this project and the amount of information that is unknown (ask DEQ to furnish you with the Plan Review Report, April 4, 1993, by Audrey Eldridge, DEQ hydrogeologist, and Monty Morshed, and pay particular attention to their "Observation/Comments"), the short term costs to suspend all landfilling activities and begin the immediate construction of impervious covers over the existing landfill until the present contamination can be remediated would impact only the parties responsible for the present situation, the landfill owners. When they have remediated the landfill and can demonstrate that they can operate a landfill that will not pollute, they can reopen. The County can utilize the existing cost effective alternatives during this interim time. This approach should provide RLC with sufficient incentive to quickly and effectively correct the current situation and minimize the potential for additional contamination during the remediation phase. This approach will also allow DEQ to clear up any appearance that they have anything other than the best environmental protection interests of the citizens of Oregon in mind.

Respectfully submitted,

Gil Depuy, President of CAP
13780 SW Masonville Road
McMinnville, Oregon 97128
Phone #472-7667 or 472-2507

CAP (Citizens Against Pollution)
13780 SW Masonville Road
McMinnville, Oregon 97128

June 4, 1993

TO MEMBERS OF ENVIRONMENTAL QUALITY COMMISSION

William Wessinger
Emery N. Castle
Henry Lorenzen
Carol A. Whipple
Linda R. McMahan

Re: RENEWAL OF RIVERBEND LANDFILL COMPANY'S DEQ PERMIT #345

The Oregon Department of Environmental Quality is processing an application for the renewal of Riverbend's DEQ permit which expired on January 30, 1992 - not as a local facility to serve a portion of Yamhill County as originally sited, franchised and permitted, but as a regional facility with a license to import garbage "from within and without the State of Oregon".

Since this was not a safe site for even a small landfill as was originally intended, the citizens of Yamhill County have many concerns about the impact of such a large facility on this fragile site.

Some of these concerns are set forth in the enclosed documents:

1. Status of Riverbend Landfill.
2. DEQ letter of 3/25/91 to Riverbend.
3. DEQ's Chance to Comment on Renewal.
4. Willamette Week's articles regarding Riverbend.

We hope you will have time to review some of this material before your June 10 meeting. Our attorney, Karl G. Anuta, and/or one of our group would like to speak briefly during the public forum period on June 10.

Sincerely,

Cleo Westphal

Cleo Westphal - Secretary of CAP

w
Enclosures

cc: Karl G. Anuta

OSPIRG
The Oregon State Public Interest Research Group
1536 SE 11th Portland, Oregon 97214 (503) 231-4181, FAX: (503) 231-4007

June 10, 1993
Environmental Quality Commission

Subject: 1991 Plastics Recycling Law

Dear Environmental Quality Commission:

OSPIRG wants to briefly alert you on the newest issue arising around plastics recycling.

In 1991, plastics recycling standards were a key part of the comprehensive Oregon Recycling Act (Senate Bill 66). The plastics recycling law was the result of months of negotiation among the American Plastics Council, OSPIRG and other interested parties. All parties involved agreed to the law and understood what was required by the recycling rate standard. While we have always maintained that the law should set increasingly high standards, we still agree with the law and what is required.

In contrast, the plastics industry and others are doing what they can to evade the law's requirements. In 1992, this Commission recommended against any exemptions to the law or compliance date extensions. Today, there is strong pressure on the Legislature to exempt most plastic packaging from the law, or to grant compliance date extensions.

In addition, the newest evasion is a burning process the American Plastics Council wants to call "recycling." The 1991 plastics recycling law clearly requires recycling, and burning does not qualify as recycling. This issue may well be before you later this year or early next year, as the Department of Environmental Quality drafts rules to implement the plastic recycling law.

This is a critical issue because the citizens of Oregon clearly want to recycle their plastic packaging. We will provide you with more information on this issue in the future, and will also be relaying the concerns of Oregon citizens.

Thank you for this opportunity to present our concerns on this issue.

Sincerely,

Lauri Aunan

OSPIRG
The Oregon State Public Interest Research Group
1536 SE 11th Portland, Oregon 97214 (503) 231-4181, FAX: (503) 231-4007

FACT SHEET ON PLASTIC PYROLYSIS

In 1991, the Legislature unanimously passed Senate Bill 66. A key part of the law -- ORS 459A.655(1) -- requires rigid plastic packaging to (1) be made with recycled plastic, or (2) meet a 25% recycling rate, or (3) be reusable. A conflict has arisen over whether burning, or "energy recovery," from plastic counts as recycling under the plastic recycling law. As set forth below, it clearly does not, and should not, count as recycling.

1. Oregon Law Distinguishes Between Recycling and "Recovery"
Senate Bill 66 deals with both recycling and recovery. The law sets overall recovery rates to be met by the state and by Oregon counties. For example, Gilliam County's recovery rate is 7%, and Lane County's is 30%. The statute specifically provides that "if there is not a viable market for recycling a material. . .the composting or burning of the material for energy recovery may be included in the recovery rate." (ORS 459A.010(4)(b); emphasis added.) In contrast, the plastics recycling law does not refer to "recovery" of plastic packaging, but focuses on plastics recycling and reuse.

2. Why Oregon Must Continue to Distinguish Between Recycling and "Recovery"
Simply put, recycling is a better, more efficient, less wasteful use of materials than recovery. For example, when a used newspaper is recycled into new newsprint, it not only keeps the newspaper out of the landfill, but conserves all of the energy, resources and virgin raw materials that would otherwise have been used to make the new newsprint. On the other hand, if the same used newspaper is molded into a fuel pellet and then burned for energy recovery, more energy is wasted than recovered, and more virgin raw materials must be extracted to make the new newsprint. Oregon law distinguishes between recycling and recovery in order to promote the most efficient, least wasteful use of materials and resources.

3. Pyrolysis As Currently Practiced Is Not Recycling
To date, byproducts of tire pyrolysis in the Washington plant have been burned for energy recovery (tire-derived gas is burned at the plant, and tire-derived oil is sent off-site to be burned as boiler or other fuel). Making the same use of plastic packaging would be unwise policy and a poor use of resources. It also clearly would not be recycling under Oregon law, as set forth above.

The plastics industry claims that byproducts of plastic bottle pyrolysis will be used to make new plastic bottles, thus qualifying as recycling. However, the current status of plastics pyrolysis is experimental. The industry admits it does not know if it will achieve its claims. If, in the future, the industry shows that some byproducts of plastic bottle pyrolysis are made into new plastic bottles and not burned, the question of "is it recycling" can be revisited.

For More Information: Joel Ario or Lauri Aunan, 231-4181

OREGON COASTAL SALMONID STATUS AND HABITAT ISSUES

Oregon Department of Fish and Wildlife
June 1993

The lives of Oregonians have always been closely tied to salmon - from native Americans to the more recent immigrants to the state. Salmon have religious and ceremonial significance, provide a livelihood for numerous Oregonians, and they are a source of recreation for many more. However, Oregon's salmon are in trouble. The Columbia Basin populations aren't the only ones of concern - coastal anadromous salmonids (salmon, steelhead and cutthroat trout) also face adversity. While some species may be below historic numbers - yet still accommodate commercial and recreational harvests, other species are in very serious decline. The factors for the decreases in Oregon's coastal salmonid populations are numerous, the causes complicated and often interrelated. The solutions to the causes are equally complicated. Some factors are beyond our control; others can be influenced or even corrected. Taking action to halt or reverse the decline of Oregon's coastal salmonid populations may change the way all of us conduct our lives. Change is difficult, but the initial hardships will be far outweighed by the long-term benefits. Conserving and restoring coastal salmonid populations will go far toward maintaining Oregon's quality of life. It will require a cooperative effort - everyone will have to sacrifice a little to save a lot. But the payoff can be tremendous.

STATUS OF COASTAL SALMONIDS

Anadromous salmonids spawn and rear in fresh water, spend some portion of their life in a saltwater environment, then return to fresh water to repeat the cycle. Freshwater and saltwater habitats available to present salmonid populations (salmon, steelhead, and cutthroat trout) are dramatically different from those that existed historically. Some of the changes are due to natural processes, but most are a result of human activities. Biologists have determined that contemporary production of coastal chinook and steelhead is about half of historic levels, while coho and chum may be less than 10 percent of historic production.

Chinook Salmon

Production of chinook salmon in Oregon coastal river basins around the turn of the century probably ranged from 300 thousand to 600 thousand adults annually. Contemporary (1980-89) production is probably 200-300 thousand wild adults annually.

Of Oregon's 55 wild coastal chinook populations, biologists have assessed 30 as healthy, eight as vulnerable, eight are depressed, and nine as status unknown.

Coho Salmon

Turn of the century production of coho from Oregon coastal rivers probably ranged from one to two million adults annually. Contemporary production is estimated at 100 thousand wild adults annually.

Of 94 wild coho populations in Oregon coastal rivers, biologists have grouped 46 by geographic area due to their similar spawning traits, thus creating 55 coastal populations for assessment. Six of these 55 populations were determined to be healthy, two were assessed as vulnerable, 41 as depressed, and six as status unknown.

Chum Salmon

During the 1930s, production of chum salmon in Tillamook Bay alone was about 130 thousand adults annually. Contemporary production of chum in the Tillamook basin is about 21 thousand adults annually. Many other coastal basins experienced declines similar to the Tillamook Bay population and presently have only remnant runs of chum.

Biologists assessed 26 populations of chum salmon. Ten were considered healthy but small, twelve were assessed as vulnerable, and four were classed status unknown. The highest concentrations of chum return to various waters in Tillamook County. Chum salmon were added to the Oregon Sensitive Species List under the "critical" category due to reductions in abundance and range.

Steelhead

Steelhead production in nine Oregon coastal river basins north from the Coquille River was about 100 thousand adults annually during the 1930s. Contemporary production in the same basins is estimated at 50 thousand wild adults annually

Biologists selected 24 populations of Oregon's winter-run steelhead for analysis and determined that five were healthy while 19 were depressed. Of the three summer-run populations selected for analysis, one was considered healthy and two depressed.

Cutthroat Trout

Biologists are unable to reconstruct the historic production of cutthroat trout from coastal rivers.

Hard data on the status of most cutthroat populations is not available. Based on anecdotal information, harvest surveys, and dam counts, biologists believe sea-run cutthroat populations have experienced a widespread decline.

FACTORS OF DECLINE

Many factors have the potential to limit the natural production of Oregon salmonids: saltwater and freshwater habitat conditions; predation by birds, mammals, and other fish species; over-harvest through commercial and recreational seasons; and competition from or interbreeding with hatchery fish.

Our understanding of the interaction of salmonids with the ocean environment is scant compared to the information accumulated for freshwater habitats. Biologists do know that upwellings of cold, nutrient-rich water along the coast influence the abundance of salmonids returning to freshwater to spawn. The ocean warming phenomenon known as El Niño has varying and generally negative effects on Oregon's

salmonids. Coho survive poorly during El Niño, yet some steelhead populations seem to do well. In addition to the periodic warming of El Niño, there has been a general long-term warming trend of ocean temperatures, and upwellings have been weak since the mid-1970s. Coho and other south-migrating populations have been impacted the most by these warming trends, while some populations of chinook and steelhead that migrate to Alaska have been affected the least.

Numerous studies of the interrelationship of salmonids with estuarine, rearing and spawning habitats have improved biologists' understanding of species needs. Clean spawning gravel of the appropriate size, suitable water quality and quantity, stream characteristics, adequate stream flows, appropriate water temperatures, and diverse habitats provided by stream channels, flood plains and wetlands all contribute to healthy and abundant salmonid populations. When any one or a combination of these attributes has deteriorated, is missing, or is made unavailable, salmonid populations suffer.

Predation by marine mammals, other salmonids, and predatory birds also affects Oregon's salmonid populations. When production is limited by other factors and protective habitat is reduced, this natural phenomena assumes greater significance than it ordinarily should.

Las Vegas odds makers would be hard pressed to estimate annual salmonid returns to freshwater streams; however, biologists must attempt to predict these numbers to accommodate commercial and recreational harvest while still providing the escapement necessary to assure spawning and perpetuation of each species. Past over-harvest from the commercial and recreational fisheries combined, plus the incidental harvest of salmonids in fisheries for other species, has also contributed to the decline of Oregon's salmonid populations.

In an attempt to compensate for lost habitat and reduced production levels, biologists supplemented wild fish populations with hatchery-reared fish. We now realize that our well-intentioned efforts may have reduced some wild salmonid populations through competition with hatchery fish and may have reduced their genetic diversity and fitness. In addition, it is extremely difficult to selectively harvest hatchery fish to avoid the over-harvest of wild fish in a mixed-stock fishery.

SALMONID HABITAT ISSUES

Although some factors limiting spawning gravel, affecting water quality and quantity, or reducing instream structural complexity occur naturally, most result from a variety of human activities.

Few coastal streams remain untouched by residential and industrial development or agricultural and forestry activities. Streams formerly characterized by a complex structure of in-stream woody debris, multiple channels, pools, and thick streamside vegetation have been cleared, straightened, riprapped, or diked. Complex instream structure fulfills a variety of habitat needs for salmonids, including hiding cover from predators, protection from temperature extremes during winter and summer, resting pools, and abundant food sources. Chinook salmon are particularly affected by development in the mainstem and lower tributary reaches. Because they are larger than other salmonids, chinook

habitat needs are also on a greater scale, yet the lower reaches of Oregon's coastal rivers meeting these needs have attracted the most human development. Even activities as far upstream as the headwaters can affect the flow, temperature, turbidity, gravel movement, and instream structure of the lower river reaches.

Human alterations to stream structure alter water flows which, in turn, affects gravel deposits and stream banks. Changes in the composition of instream gravel may make it unsuitable spawning habitat for specific species. Unstable gravel may bury deposited eggs or allow them to be scoured out. Coho require pea- to orange-sized spawning gravel in small, relatively low-gradient tributary streams that are often easily accessible for aggregate mining activities.

The removal of streamside vegetation through logging, grazing, or agricultural practices reduces or eliminates shade-producing cover. Without shade, stream temperatures increase above levels tolerated by salmonids. Chinook and coho require a substantial amount of tree-lined stream banks and shaded streams for spawning and freshwater rearing. Unlike chum and some fall chinook populations that migrate quickly to estuaries, other coastal salmonids remain one or more summers in cool, shaded freshwater habitat.

Logging of stabilizing hillside vegetation allows turbid run-off water to enter streams. Logging-associated forest roads that cross or slump into streams muddy the water or block streams. Excessive livestock use adjacent to and in streams removes vegetation or retards its re-growth, breaks down stream banks, and also stirs up mud. Sediment introduced into the water from forestry and agricultural activities may obscure the vision of fish and settle into spawning gravel where it prevents spawning or smothers deposited eggs. Steelhead generally migrate higher in the river drainages than do chinook or coho to spawn in small, moderate-gradient tributaries that are sensitive to extreme sedimentation.

Water removed from streams for residential, industrial and agricultural purposes reduces the stream flow. This too can alter stream characteristics and affect spawning gravel. Water withdrawals also lower stream levels, increase water temperatures, and add to turbidity problems when there is less water to assimilate sediment. Cutthroat trout spawn in very small tributaries and rear in side channels, backwaters and in low-velocity pools that are sensitive to excessive water withdrawals. Coho, steelhead, and some chinook that remain in freshwater over summer are also sensitive to the effects of reduced water levels.

In addition to affecting the stream habitat, water diversions that lack screens or are inadequately screened allow fish to leave the stream system and become isolated in irrigation canals.

Estuaries and wetlands have been filled, diked, and drained to facilitate agricultural, residential, and municipal development. Tidal sloughs and swamps and marsh habitats provide rearing habitat for chinook, chum and cutthroat, while large woody debris (such as fallen trees) supply hiding cover. Estuarine conditions greatly influence chum populations, since the fry spend very little time in freshwater - instead remaining in estuaries for months before they make the ocean transition.

Instream barriers to salmonid migration may be created by a number of human activities, including excessive logging debris, culverts, tide gates, and dams. Gravel removal operations and instream mining activities not only remove prime spawning gravel from streams, but also alter stream characteristics and create turbidity. Waste water discharge, industrial effluent, agricultural chemicals, and diesel fuel and motor oil from boats reduce the water quality of Oregon's coastal streams, rivers and estuaries. Accidental spills of hazardous materials into Oregon's waters not only kill fish and their invertebrate food sources, but also make the stream uninhabitable for salmonids long after the accident. Hydroelectric, flood control and irrigation dams can block fish passage, unfavorably alter stream flows and water temperatures, and inundate salmonid fish habitat. A once complex stream structure is sometimes replaced by a reservoir unsuitable for anadromous salmonids.

Individually, these activities may have only localized effects on a small population of salmonids. However, the impacts are compounded when several of these activities occur on a single stream system. The impacts are cumulative over time and along the length of the stream. Habitats never have an opportunity to recover when repeatedly disturbed, and salmonids encounter altered or destroyed habitat from the headwaters to the ocean.

CONCERNS BY COASTAL AREA

Although these habitat issues occur along the entire length of Oregon's coast, each region of the coast has its own particular problems.

North Coast (Salmon River northward)

Riparian management on forest lands reduces instream structure and recruitment of woody debris, eliminates off-channel winter habitat, and reduces shade. Forest roading creates run-off sediment, fish passage problems at culverts, and slope failures that leave sediment and debris in the streams.

Agricultural practices also reduce streamside shade, increase sediment, degrade water quality, and eliminate off-channel winter habitat through channelizing, diking, and rip-rapping.

Aggregate mining operations remove and compact chum and chinook salmon spawning gravel.

Water diversions and residential development have decreased instream flows and increased water temperatures, channelized streams, and reduced stream shading.

Mid Coast (Coquille River to Salmon River)

In addition to the forestry concerns experienced on the north coast, mid coast issues include major landslides, and decreased streamside vegetation protection with its associated increase in water temperatures.

Agricultural practices of primary concern include the loss of stream shade, increased sediment, and the loss of off-channel winter habitat through channelization.

Residential development and water diversion issues are the same as those for the north coast.

Removal and compaction of spawning gravel due to aggregate mining is also a concern.

South Coast (Winchuck River to Coquille River)

South coast issues resemble those for the mid coast, with particular concern regarding water temperature increases due to the loss of shade and decreased flows, high rates of gravel movement off logged lands, lack of juvenile and adult fish passage at tide-gates, effects of stream dredging and other mining activities (gravel mining is of less concern), and water diversions to cranberry bogs.

Inland issues on the Rogue, Applegate and Illinois rivers include irrigation practices such as excessive withdrawals that reduce flows and elevate water temperatures; blocking and stranding adult and juvenile fish; juvenile fish killed by unscreened, poorly screened, or badly managed diversions; and adult and juvenile delays and mortality at the Savage Rapids Dam. Inland urbanization and residential development have decreased stream shade, diminished stream structure through channelization, created impassable culverts, and reduced stream flows through illegal water withdrawals for "hobby farms" and ponds. Mining in the Rogue, Applegate and Illinois rivers has produced severe sedimentation, relocated channels, removed streamside vegetation, produced chemical pollution, and disturbed or removed spawning gravel. Inland forestry issues include the loss of shade, increased sediment from logging and roads, impassable culverts, and the lack of recruitment of instream wood. The increased human population in the vicinity of these rivers has also resulted in more frequent hazardous material spills and other pollution episodes.

TAKING ACTION

We are just beginning to learn about the interrelationship of salmonids with the ocean environment and understand the effects of ocean conditions on Oregon's wild and hatchery salmonid populations. Commercial and recreational harvest seasons are juggled in response to production levels, and biologists are reassessing the benefits of the present practices for releasing hatchery-reared fish into Oregon's coastal streams. The most effective action we can take to benefit Oregon's wild coastal salmonid populations is habitat conservation and restoration.

Maintaining and protecting existing good habitat guards the source that produces Oregon's salmonids. Once lost, natural conditions cannot be duplicated. Restoration of damaged habitat is very expensive and the results are not as certain as those produced by natural habitat. Conserving existing habitat is also a more equitable means of distributing the "cost" of healthy salmonid populations. Habitat protection and conservation is not just a fish management issue, but one of administering a public resource.

Under a watershed restoration approach, the factors that most acutely limit salmonid production are assured the most attention. Coordination among concerned entities and individuals promises counter-productive activities will not occur within the watershed undergoing restoration. Habitat renewal on a watershed basis also distributes costs and responsibilities more equitably.

Whether restoring or maintaining coastal salmonid habitat, present and future generations of Oregonians will enjoy the benefits of healthy ecosystems

that support self-sustaining populations of a wide variety of fish and wildlife

EXPECTATIONS

As the steward of Oregon's natural resources, state government is expected to take a cooperative approach to habitat conservation and restoration. Networking with agency constituents to include them in the management process, enforcing existing rules and resource standards, and developing and modifying rules and standards as needed to ensure the perpetuation of Oregon's natural resources serve to maintain the quality of life for which the state is known.

Local governments and authorities are also major players in the conservation of Oregon's wild coastal salmonids, since many decisions affecting their habitat are made at this level. Cooperation and coordination with state conservation and restoration programs and activities expands public stewardship to the individual Oregonian.

The factors causing the decline in Oregon's coastal salmonid populations are numerous. The effort to correct the situation must, therefore, come from more than one sector of the population. Everyone must participate. Salmon, steelhead and cutthroat trout are valued resources to Oregonians and worth the effort to reverse their decline.

FACTORS POTENTIALLY LIMITING NATURAL PRODUCTION OF OREGON COASTAL SALMONIDS

The following matrix tables were prepared in advance for presentation by the panel on *Factors Potentially Limiting Natural Production* at the *Governor's Coastal Salmonid Restoration Initiative* in Newport, Oregon, December 15-17, 1992. The matrixes show a broad array of factors that potentially limit production of anadromous salmonid species that spawn naturally in Oregon's coastal basins (production = catch + return spawners). The intent is to provide a biological basis for selection of protection and restoration efforts that will provide broad benefits, rather than benefits to just one species, one stream, at a time. All species of anadromous salmonids having wild populations recognized by the Oregon Department of Fish and Wildlife in coastal basins are addressed (coho, chinook, and chum salmon, steelhead, and sea-run cutthroat trout). Basins from the Winchuck River on the South Coast through the Necanicum River on the North Coast are addressed.

Biologists working for a variety of federal, state, academic, and private entities assessed the potential for each factor to limit the natural production of Oregon coastal salmonids. Each biologist focused on factors in the matrix related to their field of expertise. In assessing the potential of each factor, they obtained input from published reports, unpublished data, and verbal contact with other experts. The major categories of limiting factors included in the matrix, and the biologists who assessed their potential to limit natural production, were:

Spawning Habitat	Gordon Reeves, U.S. Forest Service
Stream Rearing Habitat	Pete Bisson, Weyerhaeuser
Estuarine Habitat	Dan Bottom, Oregon Department of Fish and Wildlife
Marine Habitat	Bill Pearcy, Oregon State University
Predators (Mammals)	Robin Brown, Oregon Department of Fish and Wildlife
Predators (Birds)	Roy Lowe, U.S. Fish and Wildlife Service
Predators (Fish)	Tom Poe, U.S. Fish and Wildlife Service
Harvest	Dave Hankin, Humboldt State University
Hatchery Fish	Reg Reisenbichler, U.S. Fish and Wildlife Service
Critically Low Populations	Reg Reisenbichler, U.S. Fish and Wildlife Service

Besides a coastwide matrix, the biologists developed matrixes for three sections of the coast (attached). However, these three only include spawning habitat factors and stream rearing habitat

factors while the coastwide matrix includes all major categories of potentially limiting factors. Geographic areas covered are:

South Coast	Winchuck River to small streams south of the Coquille River
Central Coast	Coquille River through the Salmon River
North Coast	All streams north of the Salmon River

Assessment of potential that a factor is limiting natural production of a species in the geographic area covered by each matrix is coded as follows:

H = High potential.
M = Medium potential.
- = Low potential.
? = Insufficient information exists for making professional judgement.
N/A = Not applicable because no evidence that wild populations were present in last few hundred years.

In addition, the following codes are given in the matrixes:

***** = A priority for gathering new information that would help in restoration of fish populations.
( ) = A footnote (explanation of footnotes provided after the last matrix).

In order to give the public a more complete assessment of factors potentially limiting natural production, the biologists were asked to not limit themselves to what is provable with high statistical confidence and, as persons highly qualified to do so, apply their professional judgement to the best information available in assessing each factor in the matrix. The "?" and "*" symbols and some of the footnotes help indicate that the amount of information available varies with the factor and the species assessed. The biologists recognize that new information will become available on many of the factors each year and could change some of the assessments.

The general categories of potentially limiting factors could be dissected into many more sub-categories. However, it would be too time consuming for this conference to address the many possible sub-categories of potentially limiting factors. These are not ignored, but incorporated into broader categories in the matrixes. The biologists who created these matrixes have some concern that matrixes can mistakenly lead viewers to the perception that each factor operates independently of other factors. The reality is that many of these factors are linked to each other, and whether linked or not, can have effects on natural production that are more than the sum of individual effects from each factor. These biologists welcome questions and welcome additional information that would help increase the accuracy and usefulness of the matrixes.

FACTORS POTENTIALLY LIMITING NATURAL PRODUCTION
COASTWIDE

	SPAWNING HABITAT						STREAM REARING HABITAT						ESTUARINE HABITAT						
	Holding Pools	Migration Barriers	Gravel Quant/Qual	Water Quant/Qual	Temperature	Other	Channel Complexity [B1]	Streamflow [B2]	Temperature [B3]	Migration Barriers [B4]	Flood Plain and Wetland [B5]	Other	Estuary Morphology	Forested Swamp/ Wetland	Salt Marshes	Tidefiats [C1]	Subtidal Refuges [C2]	Off-Channel Nurseries	Other
Coho	-	-	M	-	-		H	M	H	?*	H		M	H*	-	-	?*	H*	
Chum	-	M	H	M	-		- [B6]	- [B6]	- [B6]	?* [B6]	- [B6]		H	?*	H*	M	H*	H*	
F. Chinook	M	-	H	?	-		M*	M*	M*	?*	?*		H	H*	H*	M	H*	H*	
S. Chinook	M	-	H	?	M		H*	M*	M*	?*	?*		H	H*	H*	M	H*	H*	
S. Steelhead	-	-	-	?	-		H	H	H	?*	H		-	-	-	-	-	-	
W. Steelhead	-	-	-	-	-		H	H	H	?*	H		-	-	-	-	-	-	
Cutthroat	?	M	?	-	-		H	H*	H*	?*	H		H	H*	-	?	H*	H*	

	MARINE HABITAT			PREDATORS				HARVEST					HATCHERY FISH					Critically Low Wild Populations
	Upwelling	Currents and Water Masses	Other	Mammals	Birds	Fish [E6]	Other	Ocean, Targeted	Ocean, Incidental	Bay	River	Other	Competition	Predation	Disease	Inter-breeding	Other	
Coho	H*	H*		M [E1]	?	-*		H	-* [F1]	?	-		?*	-	?	M*		H
Chum	M	H		M [E1]	M [E5]	?*		-	-* [F1]	-	-		-	?	-	-		H
F. Chinook	H* [D1]	H* [D1]		- [E2]	M [E5]	-		H	-	M	M		-	M	-	-		- [H1]
S. Chinook	H* [D1]	H* [D1]		- [E2]	M [E5]	-		H	-	M	M		-	-	?	-		- [H1]
S. Steelhead	H [D1]	M [D1]		- [E2]	?	?		-	-	-	M		M	-	?	M		M
W. Steelhead	M	H		M [E3]	?	?		-	-	?	M [F3]		M	-	?	H*		?
Cutthroat	H	M		M [E4]	?	?*		-	- [F2]	M*	-*		?	-	?	?*		?

FACTORS POTENTIALLY LIMITING NATURAL PRODUCTION
NORTH COAST

	SPAWNING HABITAT						STREAM REARING HABITAT					
	Holding Pools	Migration Barriers	Gravel Quant/Qual	Water Quant/Qual	Temperature	Other	[B1] Channel Complexity	[B2] Streamflow	[B3] Temperature	[B4] Migration Barriers	[B5] Flood Plain and Wetland	Other
Coho	-	-	M	-	-		[B7] H	M	H	?	H	
Chum	-	M	H	M	-		[B6] -	[B6] -	[B6] -	[B6] ?	[B6] -	
F. Chinook	-	-	M	?	-		M	M	[B8] M	?	?	
S. Chinook	M	-	H	?	H		H	M	[B8] M	?	?	
S. Steelhead	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	
W. Steelhead	-	-	-	-	-		H	H	H	?	[B9] H	
Cutthroat	?	M	?	-	-		H	H	H	?	H	

FACTORS POTENTIALLY LIMITING NATURAL PRODUCTION
CENTRAL COAST

	SPAWNING HABITAT						STREAM REARING HABITAT					
	Holding Pools	Migration Barriers	Gravel Quant/Qual	Water Quant/Qual	Temperature	Other	[B1] Channel Complexity	[B2] Streamflow	[B3] Temperature	[B4] Migration Barriers	[B5] Flood Plain and Wetland	Other
Coho	M	M	M	-	-		H	M	H	?	H	
Chum	-	-	M	-	-		[B6] -	[B6] -	[B6] -	[B6] -	[B6] -	
F. Chinook	-	-	M	M	M		M	[B10] M	M	?	M	
S. Chinook	M	-	M	M	M		H	[B10] M	[B11] ?	[B12] M	M	
S. Steelhead	M	-	M	-	-		H	H	H	?	H	
W. Steelhead	-	-	-	-	-		H	H	H	?	H	
Cutthroat	?	M	M	M	-		H	H	H	?	H	

FACTORS POTENTIALLY LIMITING NATURAL PRODUCTION
SOUTH COAST

	SPAWNING HABITAT						STREAM REARING HABITAT					
	Holding Pools	Migration Barriers	Gravel Quant/Qual	Water Quant/Qual	Temperature	Other	[B1] Channel Complexity	[B2] Streamflow	[B3] Temperature	[B4] Migration Barriers	[B5] Flood Plain and Wetland	Other
Coho	-	-	-	-	-		H	H	H	?	H	
Chum	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	
F. Chinook	M	-	H	-	-		[B13] ?	[B14] H	[B17] M	?	[B18] ?	
S. Chinook	-	H	-	-	M		[B13] ?	[B14] H	M	?	[B18] ?	
S. Steelhead	-	H	-	H	-		H	[B15] H	H	?	H	
W. Steelhead	-	M	-	M	-		H	[B16] H	H	?	H	
Cutthroat	?	?	?	?	?		H	H	H	?	H	

FACTORS POTENTIALLY LIMITING NATURAL PRODUCTION

EXPLANATION OF FOOTNOTES ON MATRIXES

STREAM REARING HABITAT

B1 Channel complexity refers to large woody debris (such as logs and root wads of trees) and other hiding "cover", pools, and general habitat diversity. Production limitation occurs through reductions in hydraulically complex habitat for fry along the stream margins, reduced cover from predators, and possibly increased competition between species. In general, loss of large pools constitutes a major production limitation for age 1 and older juveniles, which prefer these habitats, but only a minor problem for age 0 juveniles. Reduced habitat complexity has been shown to limit salmonid species diversity in Oregon coastal streams.

B2 Production limitation in summer occurs through dewatering of streams by domestic water intakes, agricultural withdrawals, and flow regulation below dams. Reduced summer flows may also occur where riparian zones are dominated by hardwoods because of increased water loss through evapotranspiration, or where mass wasting has resulted in aggraded stream channels and more subsurface flow. In any case, lower summer flows can result in increased intra- and interspecific competition, increased susceptibility to predation, and possibly stranding. Reduced summer flows can also act synergistically with temperature increases and reduced channel complexity to further limit rearing potential. Lower flows generally reduce water mass per unit of surface area, resulting in increased temperatures. In winter and spring, intense storms shortly after fry emergence can cause downstream displacement, resulting in streams being inadequately seeded. Stormflow peaks in small watersheds may or may not be influenced by land management activities depending on hydrologic maturity of vegetation and the characteristics of road systems and urban developments. High turbidity from road runoff or other chronic sources may cause inhibition of feeding or premature emigration from streams.

B3 Production limitation from temperature increases occurs through metabolic stress, reduced resistance to certain pathogens, competitive displacement by species adapted to warmer thermal regimes, and sometimes direct mortality. Most temperature increases are due directly to loss of riparian vegetative canopy, although heated return water from agricultural or urban uses may be present in some rivers. In many cases, temperature increases reduce metabolic food conversion efficiency and lower growth rates of salmonids when food is not abundant due to increased metabolic costs to these cold-adapted species. Competitive elimination of salmon and trout can be particularly severe in medium to large streams where non-salmonid fishes are abundant, but can also occur in small streams where potential competitors are present. Coho and steelhead have been shown to be vulnerable to loss of competitive ability due to temperature stress, and chinook may be vulnerable to negative interactions with introduced species. Specific effects of elevated temperatures on disease resistance probably vary according to

river system and the temperature acclimation and inherent disease resistance of the stock.

B4 Relatively little is known about the degree to which man-made migration barriers limit salmonid production in coastal streams. Most research has concentrated on blockage of the upstream migration of spawning adults; however, some structures may also prevent juvenile salmonids from reaching critical rearing areas (e.g., overwintering sites or thermal refugia). Common types of structures that can impede migrations of both adults and juveniles include culverts, water diversion structures, and heavy debris accumulations. Beaver dams can occasionally limit upstream migration, but they generally provide excellent rearing habitat from some species. Research in Washington has suggested that culverts may impede the downstream movement of chum salmon fry; however, this phenomenon has not been reported from Oregon coastal streams to-date.

B5 Production limitation occurs through loss of riverine ponds, off-channel habitat along braided streams, and wetlands that may be utilized on a seasonal basis for overwintering or thermal refugia. The problem has been further exacerbated by removal of floodplain vegetation and by gravel mining operations. Indirectly, floodplain and wetland areas contribute to the food base of the stream system, and isolation of rivers from their floodplains through channelization, bank protection, and other flood control measures has reduced the amount of organic matter entering aquatic food chains. For example, research in the Columbia River has shown major shifts in food chains supporting salmonid production from large benthic detritivores feeding on macrodetritus to small zooplankton feeding on microdetritus, partly in response to flood control measures and isolation of the river from its natural floodplain. Floodplains may be important temporary rearing sites for some species during severe winter storms.

B6 Potential limitation of chum salmon production during the free-swimming freshwater phase of life cycle is believed to be minor because chum fry move quickly downstream to the estuary soon after emergence and do not reside in streams. Most downstream movement apparently occurs at night.

B7 Report to be the principle limiting factor for coho in the North Coast region by ODFW biologists.

B8 Considered to be a major limiting factor in the Nehalem River by ODFW biologists.

B9 Gravel mining in Tillamook District may impact overwintering habitat of coho and steelhead, but extent is not known.

B10 Water withdrawals in the Umpqua River system suggest that chinook are at high risk from this factor.

B11 Effects of elevated temperatures on chinook in the Central Coast are not well known; however, ODFW biologists think high temperatures in the Umpqua River may significantly limit production.

B12 Juvenile spring chinook in the South Umpqua are known to move upstream in the summer and may be prevented from reaching thermal refugia by migration barriers.

B13 Ratings for this category were variable and ranged from "low" to "high", according to ODFW biologists.

B14 Ratings for this category by ODFW biologists were mostly "medium", but chinook in the Rogue River were believed to be vulnerable to low streamflow caused by water withdrawals and other processes reducing summer flows.

B15 Upper Rogue River considered to be major problem area by ODFW biologists.

B16 Illinois River considered to be major problem area by ODFW biologists.

B17 Concern was expressed by ODFW biologists over changes in the thermal regime as a result of discharges from Lost Creek Dam.

B18 South coast chinook juveniles are known to use wetland areas as cool water refugia; however, the extent to which wetland loss potentially limits production is not known.

ESTUARINE HABITAT

C1 Tideflats are not the most limiting factor for anadromous salmonids in Oregon estuaries, but they are among the most important food producing habitats for these fish, and therefore merit protection.

C2 Subtidal refuges include eel grass beds and large woody debris (such as logs and root wads of trees).

MARINE HABITAT

D1 These assessments of potential to limit natural production are composites for populations that migrate south into waters off of Oregon and California and populations that migrate north into waters off Canada and Alaska. Those populations that migrate to the south are considered to be affected more by upwelling of cold, nutrient rich water along the coast, and less by the bigger ocean currents and water masses. For those populations that migrate to the north, upwelling is believed to be less of a factor. Although some Oregon coastal summer steelhead may migrate north, the composite includes a large component of Rogue Basin fish which are unique in spending only a few months in the ocean between each return to the river, so their ocean migrations appear restricted to the Southern Oregon-Northern California area. Therefore, for summer steelhead, upwelling is assessed as having a greater potential to limit natural production compared with other currents and water masses.

PREDATORS

E1 The low abundance of returning fish in numerous coho and chum salmon populations, combined with high mammalian predator numbers at specific sites, elevates the potential that natural production could be limited.

E2 Predation by certain marine mammal species has some potential to limit natural production under conditions of severely depressed fish populations and altered aquatic environments. In most cases, this potential is thought to be low. Quantifiable, site-specific information is not available for most of these predator-prey interactions along the Oregon coast.

E3 Relatively high percentages of winter steelhead exhibiting marine mammal scars in many rivers elevates the potential that natural production could be limited.

E4 Compared with other adult salmonids, cutthroat trout are much more typical of the size of prey regularly consumed by seals and sea lions. Also, apparent declines to low abundance in some sea-run populations, combined with large increases in resident predator abundance, elevates the potential that natural production could be limited (for example, in the Umpqua River).

E5 Chinook and chum salmon juveniles reside in estuaries for a longer time than other anadromous salmonids, so they may be impacted more than other salmonids in some estuaries where releases of large numbers of hatchery smolts attract unusually large numbers of predatory birds.

E6 The ratings reflect the risk of predation by other fish in freshwater areas. Predation on juvenile salmonids by fish in the estuarine and nearshore marine areas may be higher than in freshwater, but there is even less quantifiable information available than in freshwater.

HARVEST

F1 Substantial incidental catches of coho and chum salmon have been recorded in high-seas driftnet fisheries targeted on squid. If a substantial number of the fish in the catches are of Oregon coastal origin, then these catches may have a greater potential to limit natural production than indicated here.

F2 Cutthroat trout migrations are restricted closer to shore by their short ocean-residence time, so the potential for their natural production to be limited by incidental catch in high-seas net fisheries is judged to be least among anadromous salmonid species.

F3 This rating should be "high" for rivers where a high percentage of the winter steelhead adults are hatchery fish and sport fisheries are not selective for hatchery fish. However, ODFW began finclipping all hatchery steelhead and began requiring anglers to release nonfinclipped steelhead in many coastal rivers starting with the 1991-92 season. If

this and other actions planned by ODFW to shift harvest away from wild fish are successful, this rating should be further reduced.

CRITICALLY LOW WILD POPULATIONS

H1 The potential limitation is rated "low" in general, but "high" for individual populations (for example, fall chinook in Pistol River, Euchre Creek, and Hunter Creek, and spring chinook in the Coquille and Alsea rivers).

NEW COASTAL SALMONID RESTORATION ACTIONS POSSIBLE FOR ODFW OVER NEXT 18 MONTHS WITH CURRENT FUNDING

April 5, 1993

The following are new actions to be taken in addition to existing (and more extensive) ODFW activities directed at coastal salmonid restoration. Actions are not listed in priority order.

HABITAT INVENTORY, PROTECTION, & RESTORATION

1 Shift priority for R&D fish/habitat inventory work out of Willamette Basin and into coastal basins to help identify protection and restoration needs and priorities; coordinate with STEP personnel to enlist volunteers to expand inventory effort.

2 Modify the work plans of district personnel as needed to coordinate volunteer effort to inventory fish passage problems (such as those at roads and dikes) and other easily identifiable habitat problems in each ODFW Fish District.

3 Modify the work plans of district personnel as needed to develop a priority list of specific habitat protection and restoration projects that could be implemented if funds and/or volunteers became available.

4 Assign a staff person to dedicate time coordinating with ODFW Wildlife Division and other appropriate agencies and land owners to develop and implement measures to restore and protect beaver populations where fish/habitat inventory information suggests a priority need for beaver dams.

5 Shift priority for STEP activities in coastal basins to increase effective habitat restoration activities and reduce artificial propagation activities if they compete with restoration of wild anadromous salmonids.

Example: Expand habitat work on Palouse Creek and start on Larson Creek (Coos Bay tributaries) if project funds from R&E cannot be obtained, and reduce artificial propagation activities with 1993 brood in the Coos-Coquille District.

6 Reallocate some personnel time and funds to build several off-channel alcoves or ponds for winter salmonid habitat on ODFW lands with help from Wildlife Division.

Example: Yachats Basin; Nehalem Basin (Jewel Meadows Wildlife Management Area).

7 Specify a small team of ODFW employees (3?) and dedicate a specific amount of time (4 hours/week?) to provide technical advice for agencies, companies, organizations, and individuals

interested in doing habitat restoration work. Publicize this new resource with details on how to obtain the advice.

8 Remove barriers or actively pass wild anadromous salmonids above barriers at coastal hatcheries if 1) suitable habitat exists upstream and 2) there is a low risk of increasing fish disease levels in hatchery and wild populations through introduction of disease to the hatchery water supply and multiplication of disease organisms as water flows through the hatchery.

Example: Fall Creek Hatchery; Alsea Hatchery.

9 From the list of 1,070 unscreened diversions in coastal basins, estimate the top 10 that threaten anadromous salmonids in each ODFW Fish District and work with the water diverters to get screens installed, developing creative funding sources to help, if needed.

10 Shift priority of ODFW irrigation screening program from streams with less depressed fish populations to those with the most depressed salmonid populations in coastal rivers.

11 Shift priorities for Realty Section to emphasize acquisition of critical, but unprotected anadromous salmonid habitat.

Example: Ramp Canyon wetlands (Umpqua Basin).

12 Coordinate with I&E and regions to highlight coastal restoration projects and issues for media and local leaders.

13 Develop list of locations where enforcement of existing habitat protection rules and laws needs to be increased by ODFW and other responsible agencies. Meet with other responsible agencies to promote coordinated enforcement action in listed areas.

14 Conduct meetings and workshops with other responsible state agencies and the Fish and Wildlife Division of State Police to increase priority and effectiveness of State Police in helping to enforce habitat protection laws in stream corridors.

BIOLOGICAL MONITORING AND RESEARCH

15 Modify work plans of district personnel as needed to establish systematic snorkel counts for juvenile coho as an index of abundance in several (3?) coastal streams.

16 Modify work plans of district personnel as needed to monitor maximum and minimum stream temperature during low flow period of year in streams where systematic counts of juveniles are made plus several other streams in each district..

17 Shift funds within Natural Production Program to conduct genetic analysis and identify gene conservation groups among coastal coho salmon.

18 Assign a staff person to coordinate ODFW district and research biologists in developing a list of priority research projects beneficial to coastal salmonid restoration and suitable for graduate student theses. Submit for distribution by the Governor's office to appropriate northwest colleges for consideration and discussion in follow-up meetings set up by ODFW staff specialists.

HARVEST MANAGEMENT & ENFORCEMENT

19 Propose Commission adopt regulation requiring all non-finclipped cutthroat in coastal rivers and bays be released unharmed starting in spring 1994 to protect wild sea-run cutthroat (requires fin marking of all cutthroat stocked in 1994).

20 In areas of coastal basins where staff has substantial reason for concern, propose Commission adopt regulations eliminating resident trout fishing to increase protection of anadromous salmonid juveniles from angling-related mortality (couple with elimination of stocking of resident trout in these areas).

21 Propose Commission adopt regulations for coastal basins prohibiting angling for coho salmon except in streams stocked with hatchery coho, and propose closing coho angling in those streams prior to principal wild coho migration timing, until wild populations show significant recovery in total production.

HATCHERY & OTHER ARTIFICIAL PROPAGATION

22 Mark all sea-run cutthroat trout released into coastal rivers in 1994 with an adipose fin-clip to allow selective harvest by anglers (production would have to be cut to pay for marking).

23 In areas of coastal basins where staff has substantial reason for concern, use the ODFW basin planning process to shift stocking of resident trout out of anadromous waters and into any under-stocked non-anadromous waters to protect anadromous juveniles in from competition, predation, attraction of anglers, or other impacts from resident hatchery trout (the Rogue and Umpqua basins are the only remaining applicable areas).

24 Shift the stocking of hatchery steelhead smolts away from those wild steelhead populations most at risk from impacts of hatchery juveniles and returning hatchery adults.

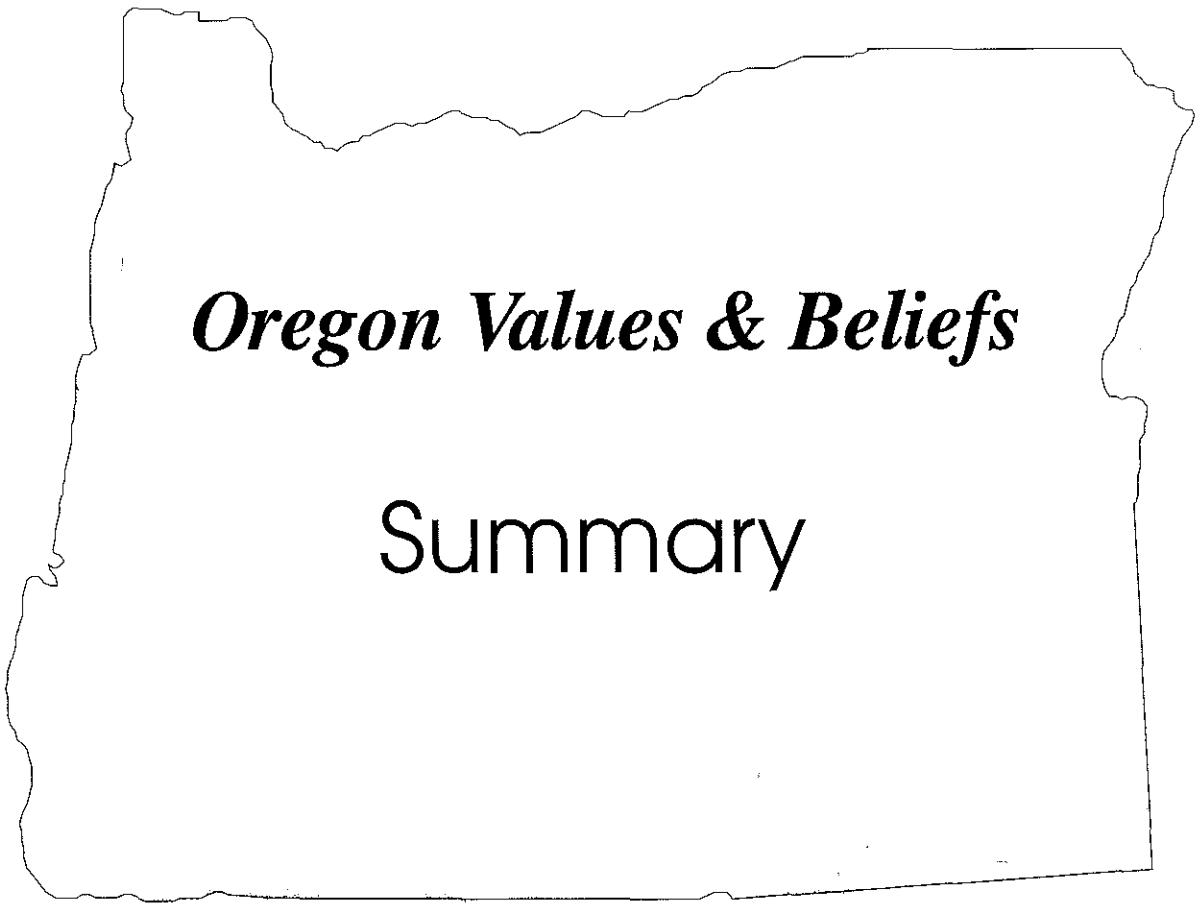
25 Develop strategy to alter release sites and times for hatchery salmonid smolts in 1994 to protect wild chum salmon in bays.

EDUCATION AND COMMUNICATION

26 Generate information for wide, multi-media, distribution promoting angling for trout and warm-water species in non-anadromous salmonid waters and explaining need to restrict trout angling in anadromous waters.

27 Involve I&E to help establish new processes and mechanisms to increase communication between ODFW and other resource management agencies on anadromous salmonid and habitat issues.

OREGON BUSINESS COUNCIL



Oregon Values & Beliefs

Summary

May 1993

ACKNOWLEDGMENTS

The Oregon Business Council, established in 1985, is a non-profit, non-partisan and independent organization of Oregon business executives. Directors of the Council are chief executive officers of Oregon-based corporations, senior executives of major Oregon divisions of national companies, and individuals from business who play a significant role in developing public policy in Oregon.

The Council's objective is to make a unique and strategic contribution to the state's long term social and economic well-being. It does this by examining a relatively few number of subjects based on thorough research and the personal involvement of every Oregon Business Council member.

Generous contributions from US Bancorp, Pacificorp, each member of the Oregon Business Council and prepaid subscriptions from the Oregon Progress Board, The Oregon Department of Economic Development, The Oregon Department of Transportation, and Tri Met made this study possible.

The Oregon Values & Beliefs Study was conducted on behalf of the OBC by Decision Sciences, Inc. of Portland. Their professional approach to this truly significant undertaking is gratefully acknowledged by the Council. In addition, the Council would like to acknowledge the assistance of various Chambers of Commerce throughout Oregon, the Oregon State University Extension Service and Red Lion Hotels for their generous support and assistance during the course of this study.

Finally, the Council gratefully acknowledges the 1,361 Oregonians who participated in this study.

OREGON CORE VALUES

FAMILIES Above all else, Oregonians cherish families and family life.

EMPLOYMENT Oregonians esteem employment and the economic conditions which create employment. They believe the world of work has changed significantly, and they acknowledge a strong relationship between skills and personal income.

EDUCATION Oregonians value education, particularly primary and secondary education. However, they believe their education institutions are not adequately addressing the changing needs and nature of work today.

LIVABILITY Oregonians treasure Oregon's physical qualities, and they acknowledge that these attributes underpin the state's economy. At the same time, they fear the future impact of population growth on Oregon's environment and livability.

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Introduction

In Oregon, there is a direct relationship between public values and public policy. Therefore understanding the public's values -- what Oregonians believe and hold dear at their core -- is critically important. Until recently, conventional wisdom about Oregonians' individual and collective values was fairly widely accepted. For most of this century, Oregon has been considered a progressive state typically on the leading edge of innovation in public policy. However, the pace of change, along with the differences produced by change, has created the need for greater clarity and depth in assessing public values.

It is against this backdrop that the Oregon Business Council (OBC), a private non-profit organization comprised primarily of chief executive officers of Oregon's largest companies, concluded that a deeper, broader understanding of the values and beliefs most important to Oregonians was critical. The Oregon Values and Beliefs study was conducted on behalf of the Council by Decision Sciences, Inc. of Portland. This summary describes the study and its key findings.

Study Purpose and Technique

The Oregon Values and Beliefs Study was conducted during the months of July and August of 1992. The purpose of the study was to:

- Explore the underlying core values of Oregonians.
- Gain understanding about those values where differences exit.
- Allow policy issues to be debated with a clear understanding of core values and beliefs.
- Allow for conclusions to be drawn regarding public sentiment on key issues confronting Oregon.
- Provide a scientifically sound benchmark of core values which may be periodically measured.

The Oregon Progress Board and its staff were deeply involved in the development of this study, and several of the questions are focused on the Oregon Benchmarks developed by the Progress Board.

The undertaking involved 1,361 Oregonians in several thousand hours of face-to-face survey interviews occurring in each of Oregon's 36 counties. Survey topics ranged from public issues of today to personal perceptions and beliefs. Furthermore, the study divided Oregon into four regions (the three county metropolitan area, southern Oregon, western Oregon [including Lane County, the balance of the Willamette Valley, and the Oregon coast] and eastern Oregon), so that additional analysis could be conducted within each region.

A variety of techniques was employed in order to assure the integrity and quality of the resulting data. It is technically correct to refer to the Oregon Values and Beliefs study as an opinion survey, within the standard context and meaning of that term. The study also represents a first-of-its-kind effort to dig beneath today's headlines and gain clarity and understanding of those basic values and beliefs which Oregonians hold and will not change significantly from day to day, week to week, month to month, or even year to year. More information about the techniques employed by the study can be found in the technical appendix (available for a nominal cost upon request).

Scaled Comparisons - Measuring Abstract Qualities

One of the features of the study which distinguishes it from more conventional opinion surveys is its use of the scaled comparison technique developed and implemented by GravesResearch of Redlands, California. Indeed, the Oregon Values & Beliefs Study is comprised of two different techniques, the scaled comparison technique (described here), and the more conventional close and open ended question technique with which most people

are familiar. Scaled comparisons are a means of ranking abstract qualities like personal values. The study measures values in four categories:

Personal Values

"Which value is more important to you personally?"

Personal Activities

"Which activity is more important in your life?"

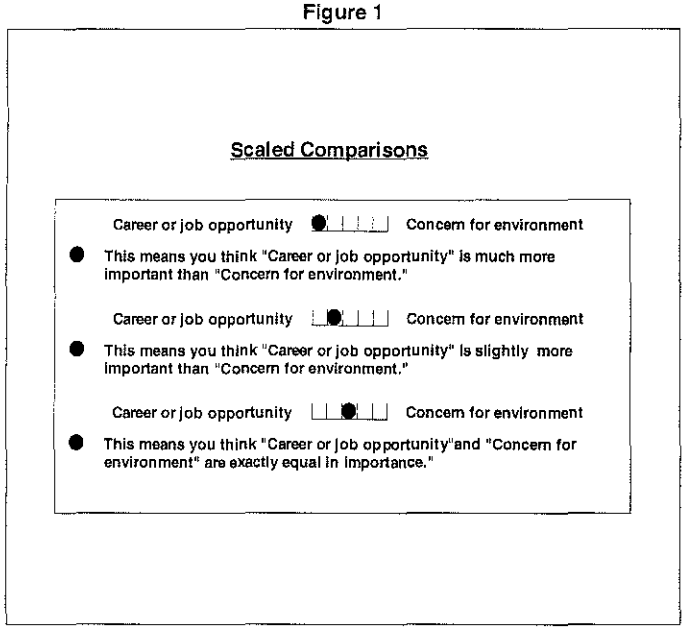
Government Services

"Which service do you feel is more important, regardless of cost or how well you think the service is currently provided?"

Community Values

"Which of the following is more important to the quality of life in the community where you live?"

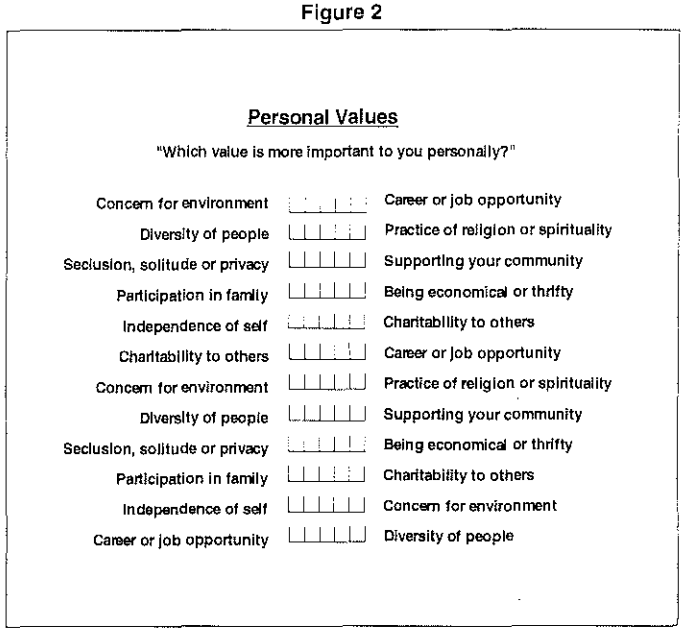
Figure 1



The technique arrays pairs of unrelated values on either side of a five-point scale. Participants mark the scale at the points that most appropriately represent their beliefs (Figure 1).

In a manner somewhat akin to ballot rotation on election ballots, each participant received a list

Figure 2



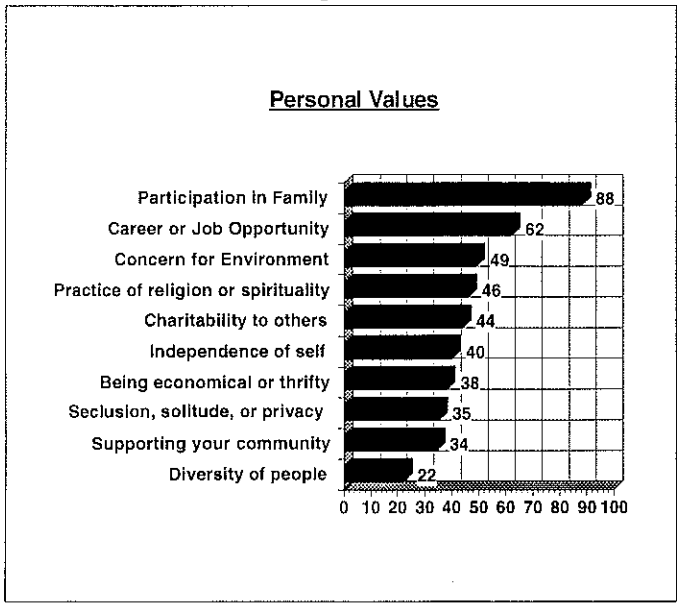
of pairs in each of the value categories which placed each value in different pairings. Figure 2 is a sample of this technique using a partial list of the personal values measured in the study. As is evident in the sample, each value is juxtaposed against every other value. At the end of this exercise, participants often feel as though they have just answered the same question a hundred different times. Values, activities and services in each of the four categories were developed after exhaustive debate and reflection and supplied to participants without explanation.

Figures 3, 4, 5, and 6 represent the statewide results obtained using the scaled comparison technique. These four graphs display findings within each of the four categories describe above (personal values, personal activities, government services, and community values).

Personal Values

Figure 3 represents the actual statewide rank order of 10 personal values which were measured. Again, these values were supplied to participants, and they were not explained. "Participation in family" ranks at the top of list of personal values by a significant order of magnitude. This focus on family represents the beginning of a theme which is consistent throughout the study: issues perceived to affect the family are paramount in the minds of

Figure 3



the vast majority of Oregonians. While there is some variation based upon gender, age, and income, "Participation in family" is the leading value identified by all demographic subgroups. "Career or job opportunity" ranks a distant, but nevertheless strong, second. This too marks the beginning of a message seen throughout the study: a clear focus on jobs.

The top two personal values represent a broad consensus among Oregonians. No consensus is evident in the third ranking value, "Concern for the Environment," where there exists a fairly discernible difference among the regions of the state.

Personal Activities

For each personal value listed in Figure 3, two associated activities are listed in Figure 4, Personal Activities. This cross referencing provides a unique opportunity to verify the personal values. For example "Spending time with family" and "Spending time with parents" lead the personal activities list. Both are derivatives of the "Participation in family" value which ranked at the top of the list of personal values. On the other hand, "Enjoying different kinds of people" and "Getting along with other cultures" (ranked 5th and 6th respectively on the list of personal activities in Figure 4) derive from the "Diversity of people" value which ranked tenth on the list of 10 personal values (Figure 3).

"Learning new skills for advancement" in

Figure 4

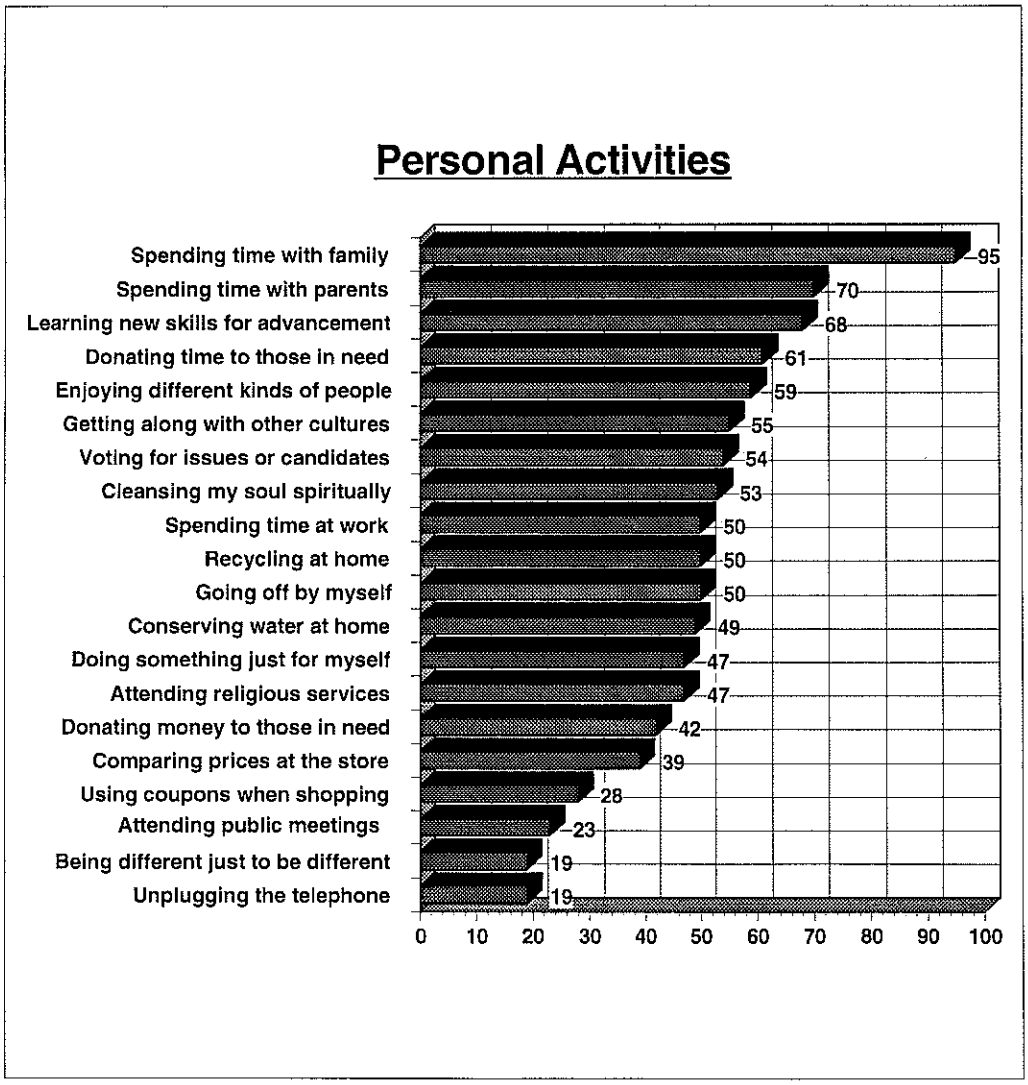
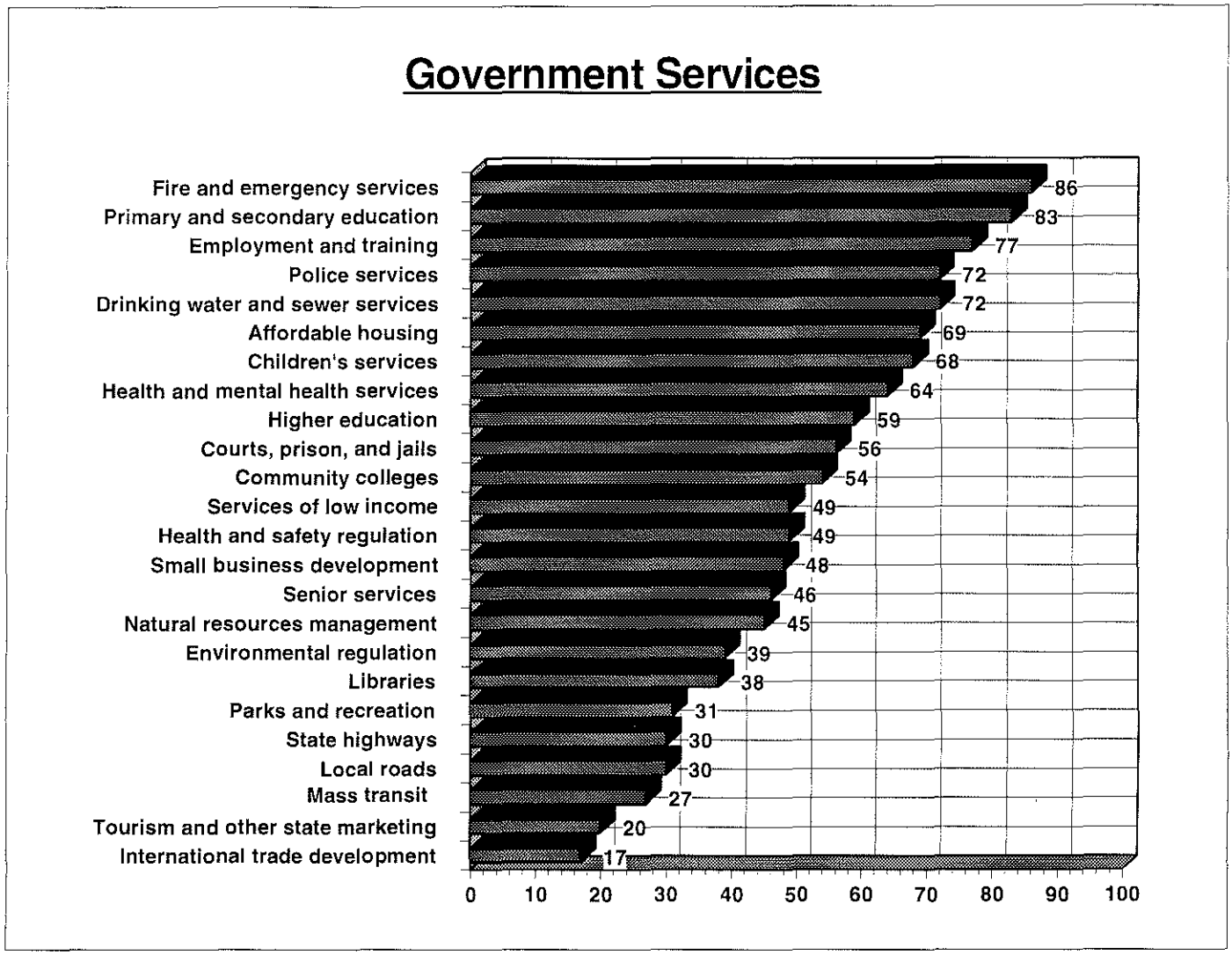


Figure 5



third position suggests a strong association with the "Career or job opportunity" value in Figure 3. This consistency reinforces the intensity and clarity of beliefs on the part of Oregonians on the subject of jobs. One wonders if "Learning new skills for advancement" would have ranked third on the list 10 or 15 years ago when a large proportion of family wage jobs required relatively low skills.

Government Services

The government services shown in Figure 5 were described by function rather than by specific government agencies so that participants could more easily relate to them. The question asked was, "Which government service do you feel is more important, regardless of cost or how well you feel the service is currently provided?" It was made clear that participants should not make value judgments about the cost or efficiency of each individual service.

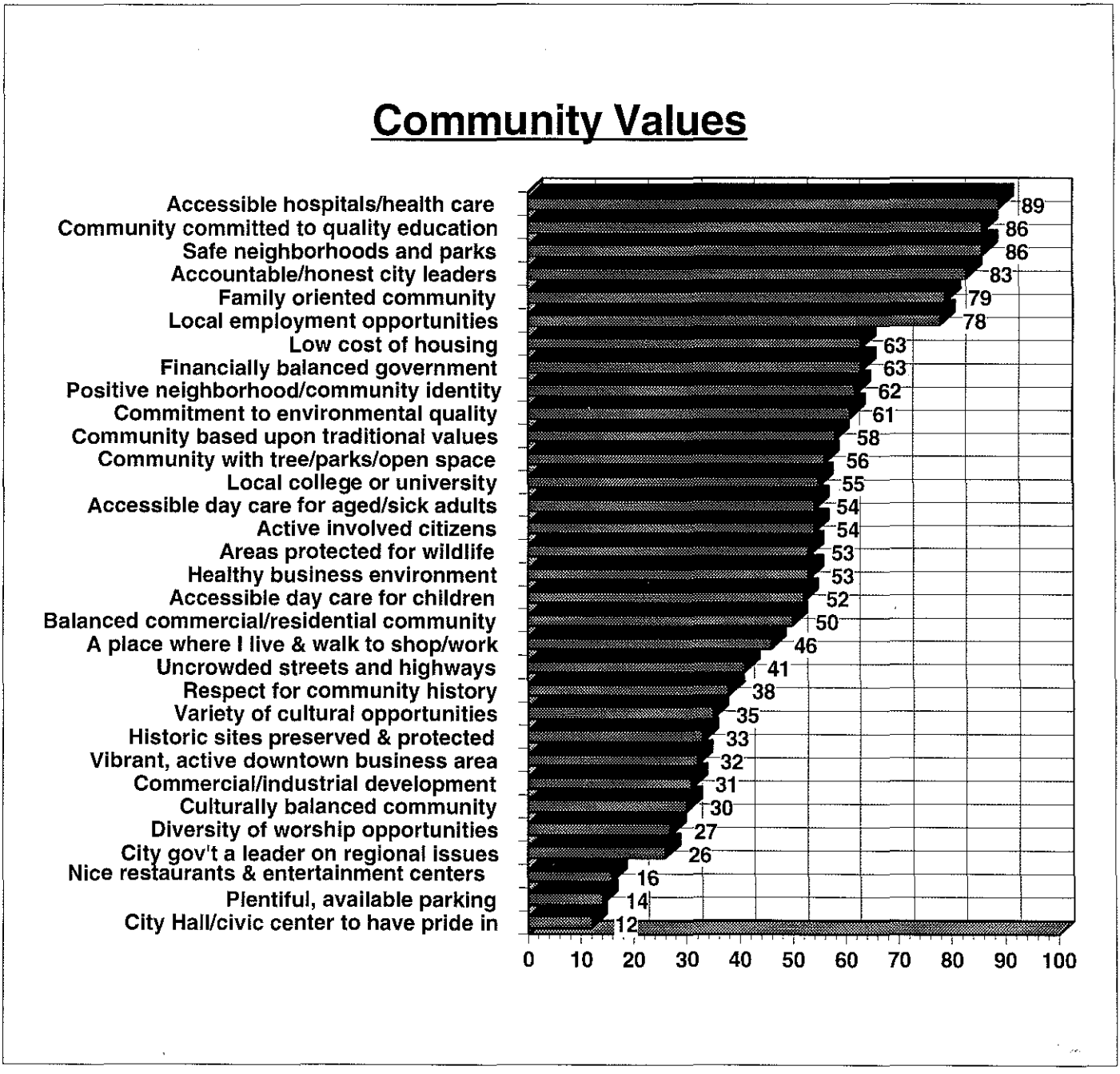
While conventional wisdom would anticipate the high ranking of services related to security and safety, the ranking of "Primary and secondary education" as a strong second is somewhat surprising. It is interesting to note that almost all of the services at the top of the list are provided by local government.

One additional theme that begins to emerge is the importance of education and job skills. "Primary and secondary education" and "Employment and training" rank two and three respectively on the list of 24 government services.

Community Values

The list of 32 community values (Figure 6) again demonstrates the importance of education, principally primary and secondary education, to the people of Oregon. Surprisingly, "Accessible hospitals/health care, was rated more important by urban residents than those in the eastern part of the state. It is interesting to note that on this list of 32 community values "Accountable/honest city leaders" ranks a strong fourth. Oregon is not particularly known for having anything other than accountable and honest city leaders. One might presume that this statement of values might be relevant for elected leaders at all levels and is a further reflection of the dissonance between our various governments and the general population.

Figure 6



Findings

The balance of this summary is organized around areas of key findings. Those include:

- Families
- Career, jobs and economic security
- Education and skills development
- The enviornment
- Regional division
- The gender gap
- Newcomers
- Diversity
- Growth management
- Health care

The concluding portion of this summary includes a look at some of these finding areas through the eyes of those who who vote as well as those who don't.

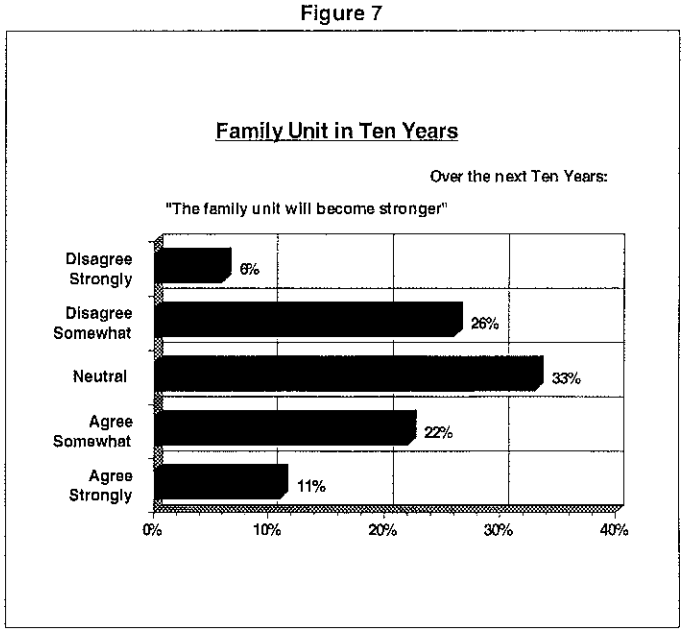
Families

The importance of families pervades the study and reflects a level of intensity that may surprise some. In the scaled comparison of personal values, "Participation in family" was at the top of the list, and the second ranking item "Career or job opportunity" was a full 26 points behind. "Spending time with family" and "Spending time with parents" ranked first and second on the list of personal activities. Fifth on the list of 32 community values was "Family oriented community."

Family Unit

In a series of questions designed to solicit predictions about the next 10 years, participants were asked about the future of the family unit (Figure 7). The result was that people are almost evenly divided about the future strength of the family unit. Nevertheless, many might consider this to be somewhat optimistic given the fact that more people agreed strongly than disagreed strongly.

Figure 7



Extra Time

In an open-ended question (participants supply the answer) asking "If you had one extra hour a week, how would you spend it?" nearly 21 percent of the responses were specifically and directly related to family, representing the single largest aggregation of responses. Arguably, several of the other response categories could be family-related.

Figure 8

Spending Extra Time

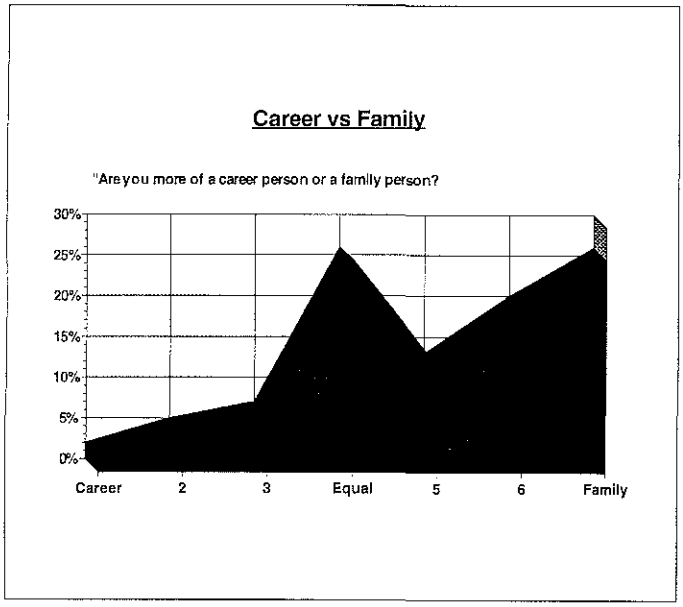
"If you had one extra hour a week, how would you spend it?"

Reading	15.0%
Spending time with family	**10.0%**
Volunteering / helping	7.7%
Spending time with children	**7.3%**
Recreation - sports	5.8%
Doing something for myself	5.5%
Recreation - nature	4.9%
Resting / relaxing	4.7%
Working gardening around the house	**4.1%**
Spending time with spouse	**3.5%**
Total Family Related	**20.8%**

Career vs. Family

When asked "Are you more of a family person or a career person?" (Figure 9), the response was strongly on the family side of the equation. With only 2 percent identifying themselves on the extreme career side of the seven point scale, fully 26 percent placed themselves on the polar opposite family end.

Figure 9



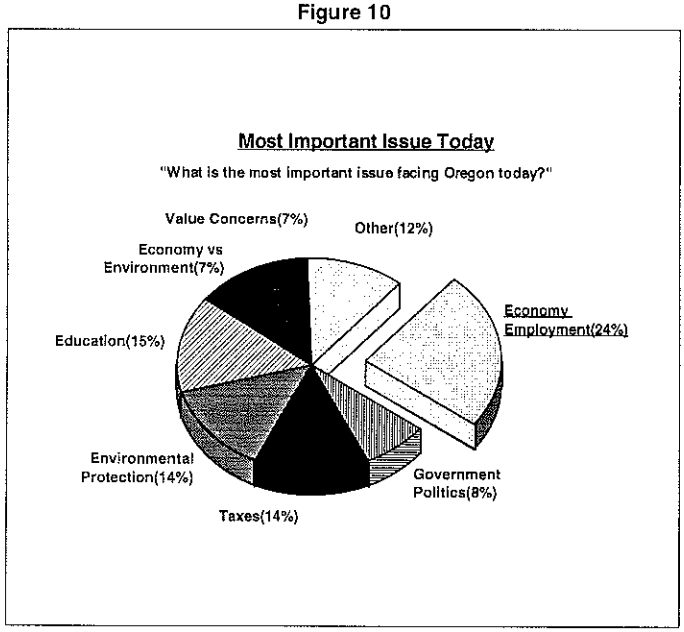
Career, Jobs, And Economic Security

Not surprisingly, Oregonians are very keenly focused on employment and many of the issues which surround it. "Career or Job Opportunity" was a strong second on the scaled comparison list of 10 personal values, and "Learning new skills for advancement" was third on the list of 20 personal activities. "Employment and training" was third on the list of 20 government services.

Most Important Issue Today

When asked to supply their own answers to the question "What is the most important issue facing Oregon today?" fully 24 percent of the respondents said either the economy or employment.

Figure 10

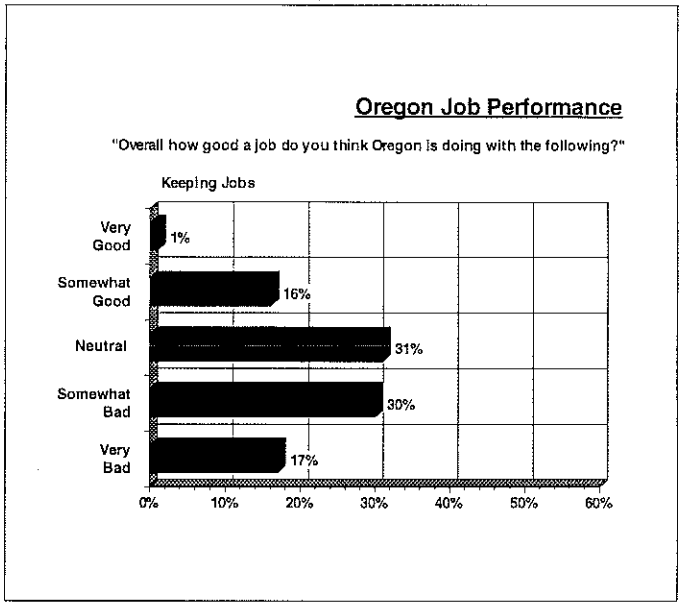


Another 7 percent listed the Economy vs. the Environment, which was essentially a complaint about the extent to which environmental protection was perceived to interfere with the economy. These responses would likely fall into a broader category relating to concern about jobs and the economy. Interestingly, a distinction is often made between jobs and the economy, implying something other than a direct relationship between the two.

Keeping Jobs

The Oregon Value & Beliefs Study included a "Job Performance" measure for 19 different items. Participants were asked to answer the question "Overall how good a job do you think Oregon is doing with the following areas?" followed by the

Figure 11

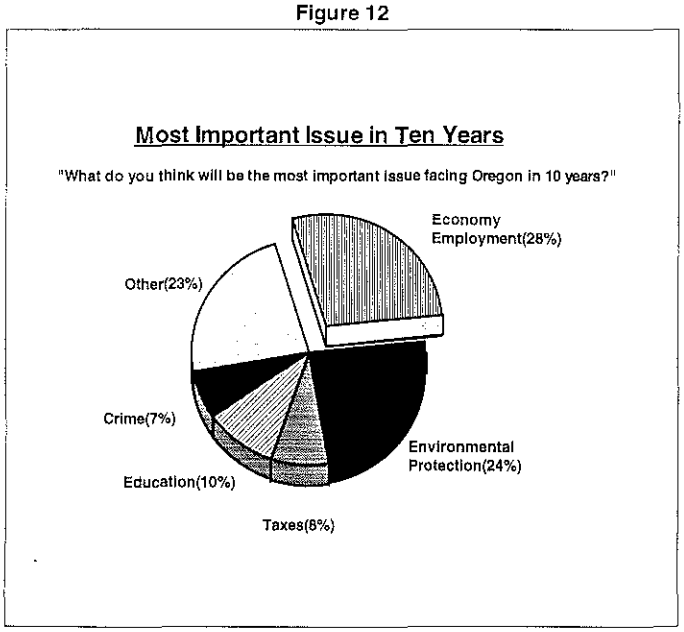


item to be measured. It is important to note that Oregon is being measured, and not some specific unit of government. On the subject of keeping jobs (Figure 11), Oregon received what can only be considered a very poor rating. Forty-seven percent of the participants regarded its performance as somewhat or very bad. Despite the fact that Oregon was doing better at keeping jobs than the balance of the nation at the time this data was collected, study participants clearly believed otherwise.

Most Important Issue in Ten Years

Participants were often asked to reflect on their values and beliefs both in the present and the future. The future horizon was 10 years. In the following example the question was "What do you think will be the most important issue facing Oregon in 10 years?" Again, the "economy/employment" were the top items. And again, both terms were used, apparently not interchangeably. "Environmental Protection" was a strong second in this

Figure 12

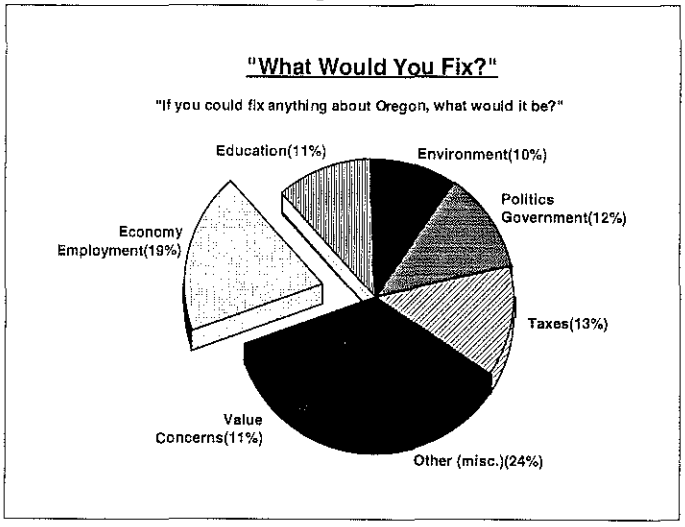


open-ended question, which reflects a broader concern about our "environmental future" and the extent to which economic and population growth will degrade our quality of life. The prominent mention of "Education" (ranked third most important here) in this question, and its place in scaled comparisons of government services, community values, and its strong showing among the most important issues today, suggest the possibility that Oregonians acknowledge a relationship between the importance of education in confronting an uncertain economic future.

What Would You Fix?

Asked "If you could fix anything about Oregon what would it be?"(Figure 13), the economy led the way with 19 percent. Education shows up again with a significant response (11 percent).

Figure 13



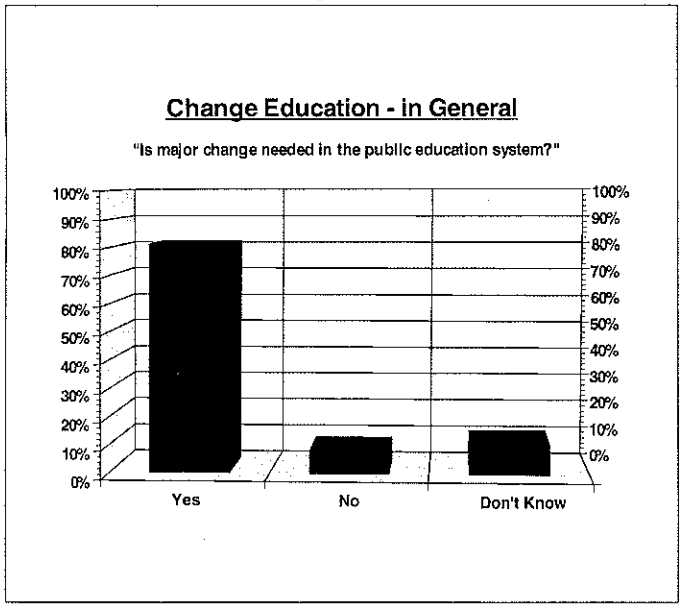
Education And Skills Development

Nowhere else in this study was conventional wisdom challenged to the extent found here. Certainly it comes as no surprise that Oregonians support education; we have consistently outspent most states (proportionately). "Learning new skills for advancement" was the third leading personal activity, while "Primary and secondary education" and Employment and training" were second and third, respectively, on the list of government services. "Community committed to quality education" was the second leading value among 32 community values.

Change Generally

It is not surprising that Oregonians want change in education (Figure 14). It is widely acknowledged that people want change in education in general. But as in surveys of satisfaction with congress, dissatisfaction typically dissipates when the issue becomes localized. "My" congress person isn't the problem; "my" local neighborhood school isn't the problem.

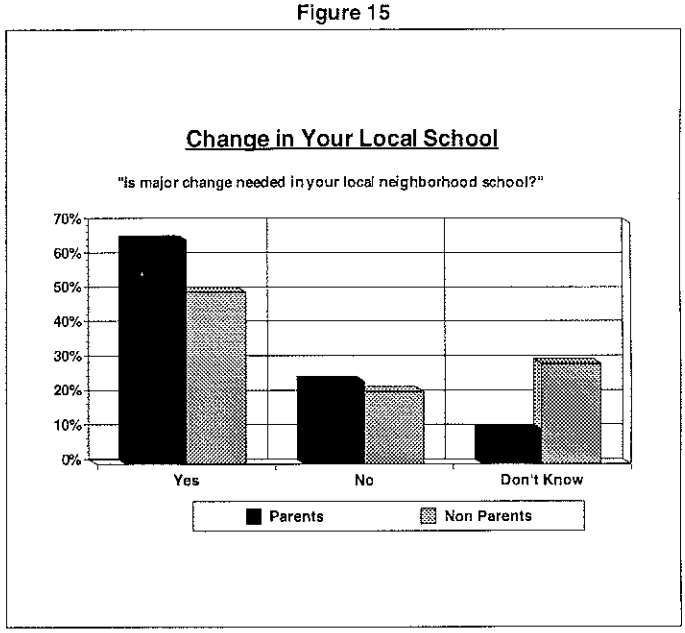
Figure 14



Change locally

When Oregonians were asked about local schools, however, a surprising number agreed that major change is needed in their local neighborhood school. What makes this response particularly interesting is the difference between parents and non-parents. Non-parents (who, after all, don't have kids in local neighborhood schools) were less likely to have an opinion. Parents (those most likely to be familiar with local neighborhood schools), feel that significant change is needed in their local neighborhood school. This finding clearly runs counter to the conventional wisdom.

Figure 15



What Kind of Change?

The study probed at some depth the kind of change that people had in mind. Is there, for example, some idealized notion of the way education ought to be based upon our recollections of education 20 or 30 years ago, or do people have something else in mind? Figure 16 represents responses to an open-ended question which asked "What kind of changes?" to those answering yes to the question in Figure 15.

Responses fell into three basic categories: curriculum, funding, and teachers. The single response mentioned most often was establishment of

Figure 16

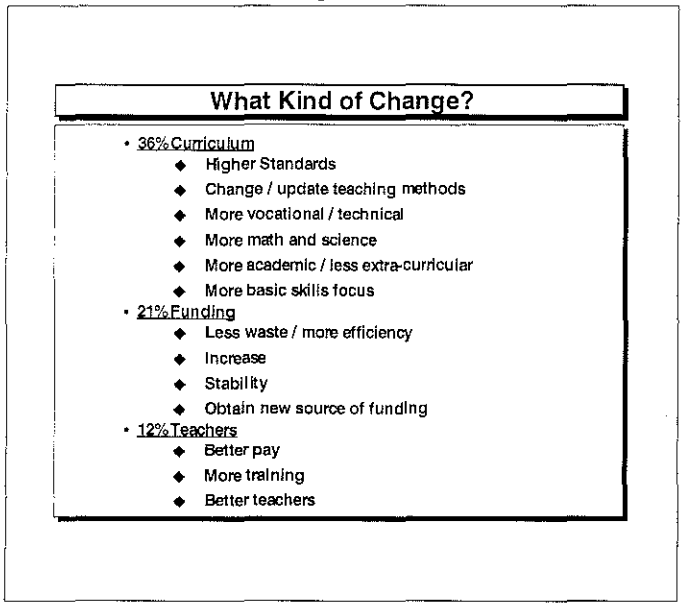
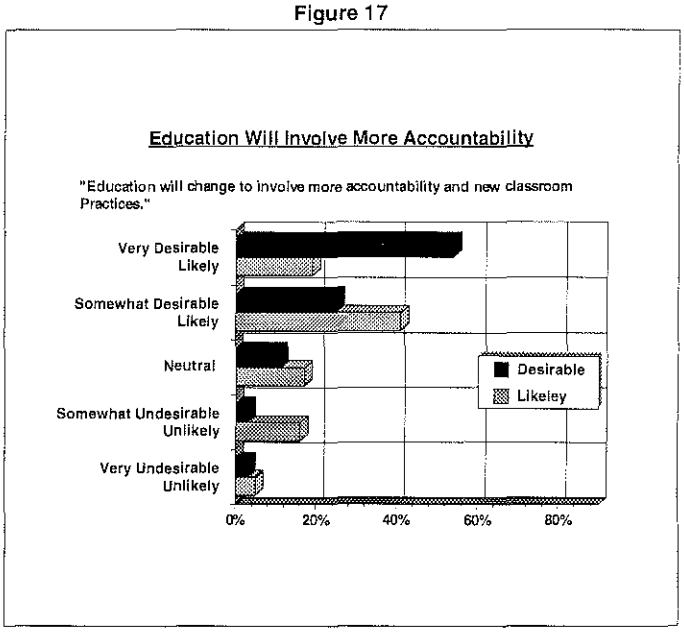


Figure 17



higher standards for students. Funding mentions combined to include 21 percent of the responses and were evenly divided between those who felt that more money was needed, and those who felt that current resources should be used more efficiently. Responses relating to teachers combined for about 12 percent and those included such things as better pay and more training. The balance of the responses to this question involved a wide variety of issues.

More Accountability

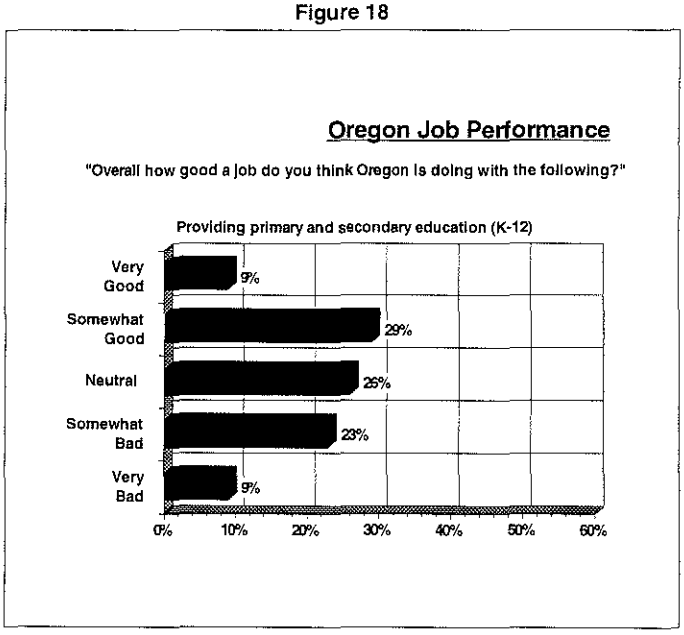
The statement in Figure 17, "Education will change to involve more accountability and new classroom practices" asked for two responses. The first asked how desirable the statement was, and the second asked how likely that same statement was. While there is a fairly significant gap between desirable and likely, in both cases a majority of participants felt that it was desirable and likely that "Education will change to involve more accountability and new classroom practices."

Primary and Secondary Education

"Providing primary and secondary education (K-12)" received a "so-so" job performance rating (Figure 17), with 38 percent saying very good to good and 32 percent saying very bad to bad. While this performance rating is not catastrophic, it does place education in the middle of the ranking.

It is important to note that while Oregonians express strong support for the importance of education, they do not express equally strong confidence in its present quality.

Figure 18

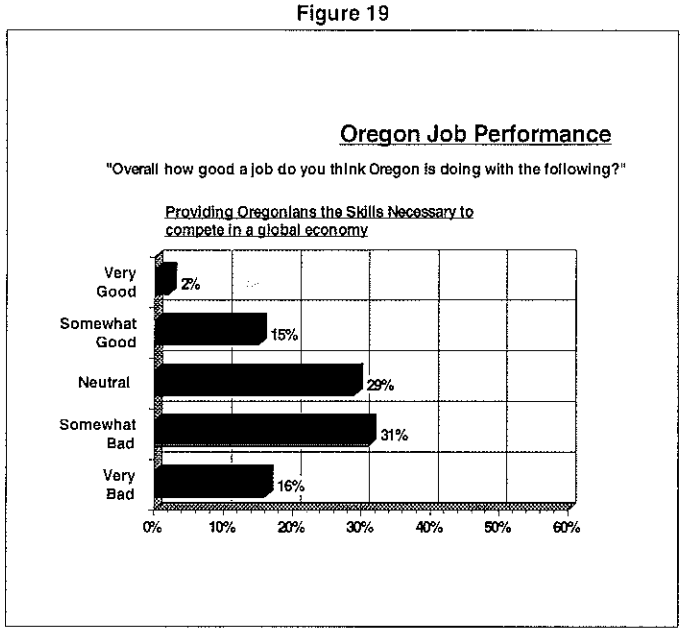


Skills for a Global Economy

A mere 17 percent of participants said Oregon is doing very to somewhat good at "Providing Oregonians the skills necessary to compete in a global economy" (Figure 18). Out of 19 items in the Oregon Job Performance, this item ranked sec-

ond from last. The ranking would suggest a further recognition by Oregonians that the global economy is significantly changing the nature of work and that Oregonians will not be sufficiently skilled to compete.

Figure 19



While "Learning new skills for advancement" was ranked third on the list of 20 personal activities, and "Employment and training" was considered the third most important government service, there appears to be a lack of confidence in the adequacy of those newly acquired skills for competing in the global marketplace.

Oregon Job Performance

Figure 20 represents the entire list of items which were ranked in the Oregon Job Performance. This list begs to be read not from the top down, but rather from the bottom up. Presumably, someone who thinks Oregon is doing well at something is not necessarily expressing approval of the item being evaluated. Conversely, it could be argued that someone who gives a bad performance rating is also expressing disappointment. In other words if they didn't care about the item being evaluated, they wouldn't give it negative rating.

With that in mind, it is not surprising to see jobs at the bottom of the list. It may not now be surprising to see the position of "Providing Oregonians the skills necessary to compete in a global economy," but one wonders how this would have fared, say, 10 to 15 years ago when the number of family-wage, low-skill jobs was in substantially greater supply.

Figure 20

Oregon Job Performance

1. Providing parks and open space
2. Making available culture and entertainment opportunities (theater, zoo, museums, etc)
3. Providing easy access to work, shops, parks, and recreation
4. Maintain clean air and water
5. Developing clean and attractive cities
6. Maintain highways, roads and bridges
7. Protecting natural resources such as forests, rivers, and farmland
8. Developing mass transit
9. Promoting Oregon to other U.S. states
10. Promoting Oregon to other countries
11. Controlling crime
12. Providing primary and secondary education (K-12)
13. Helping individuals and families in need
14. Providing government services
15. Controlling drug use
16. Providing Oregonians economic access to health care
17. Keeping jobs
18. Providing Oregonians the skills necessary to compete in a global economy
19. Creating jobs

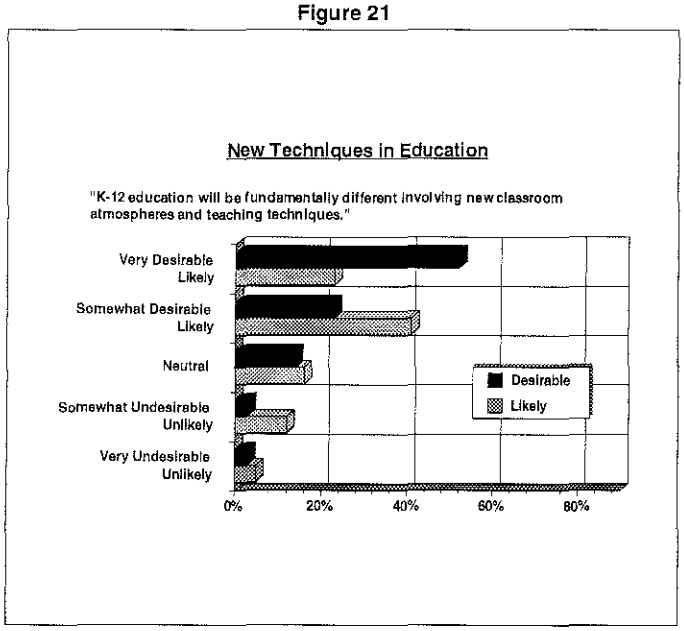
It is particularly interesting to note that Oregonians feel we're doing a better job at "Controlling crime" than at "Providing primary and secondary education." Again, given the overall importance attached to primary and secondary education in the scaled comparisons of government services and community values, this suggests strong concerns

about the delivery of education today.

New Techniques

Participants thought that "K-12 education will be fundamentally different involving new classroom atmospheres and teaching techniques" was likely to occur and, by an even larger margin found it to be desirable (Figure 21).

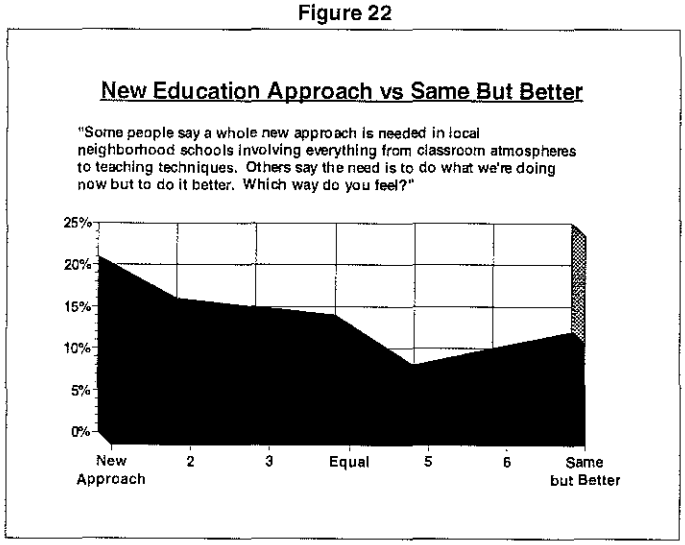
Figure 21



New Approach in Education

Provided a scenario which attempts to paint two opposite views about educational change, participants clearly leaned towards what was described as a new and different approach (Figure 22). Again, this emphasizes the extent to which participants are inclined to view educational change as something quite different than improving past practices.

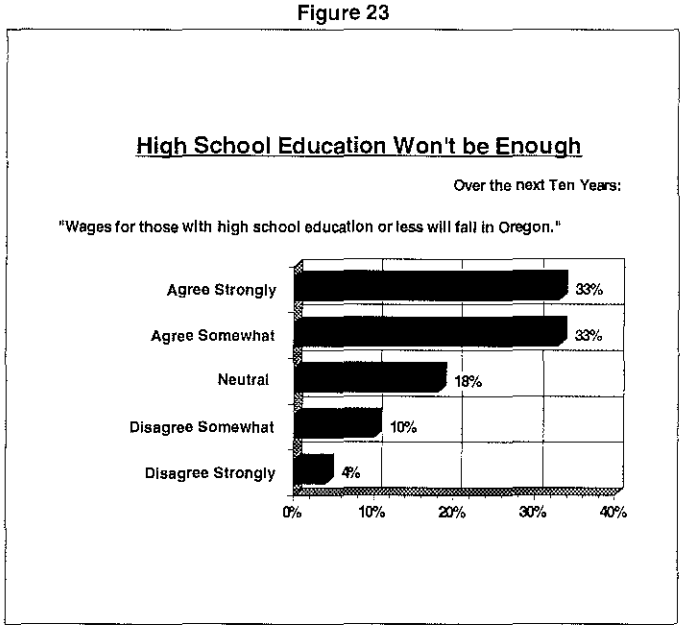
Figure 22



High School Won't be Enough

There appears to be a strong recognition that a high school education, at least as it is now configured, is inadequate in achieving economic security. In Figure 23, 66 percent of participants agreed strongly to somewhat strongly that "Wages for those with high school education or less will fall in Oregon."

Figure 23



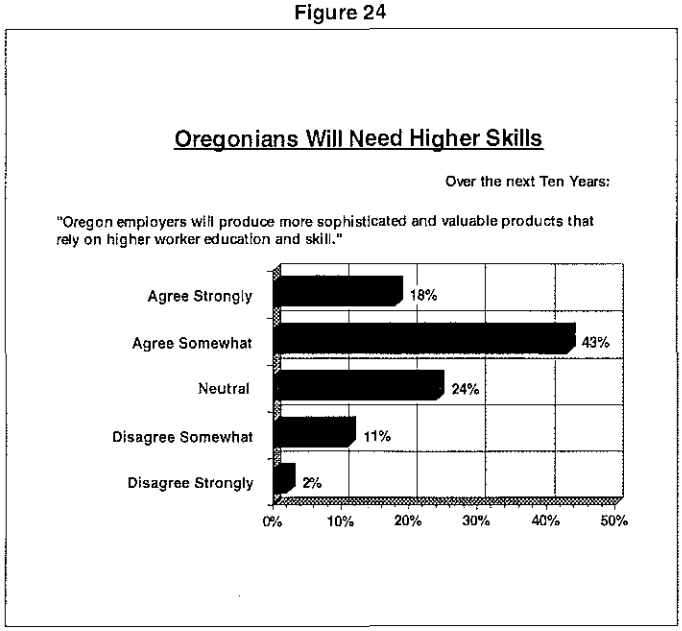
Higher Skills

Clear agreement exists that "Oregon employers will produce more sophisticated and valuable products that rely on higher worker education and skill" (Figure 24). This may seem to be obvious, nevertheless it is interesting in light of Oregon's historic relationship to natural resource industries.

Front Line Workers Will Do More

The issue of workplace structure is one that has emerged only within the last decade. Nevertheless, 63 percent of the participants agreed strongly or somewhat strongly that "Front line workers will

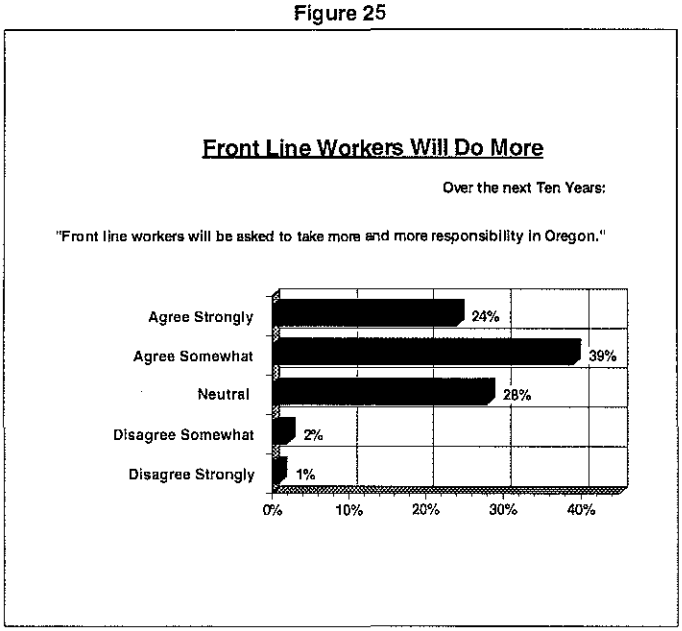
Figure 24



be asked to take more and more responsibility in Oregon."

The responses to each of the preceding three questions suggest an acknowledgment that the world of work has changed, and when combined

Figure 25



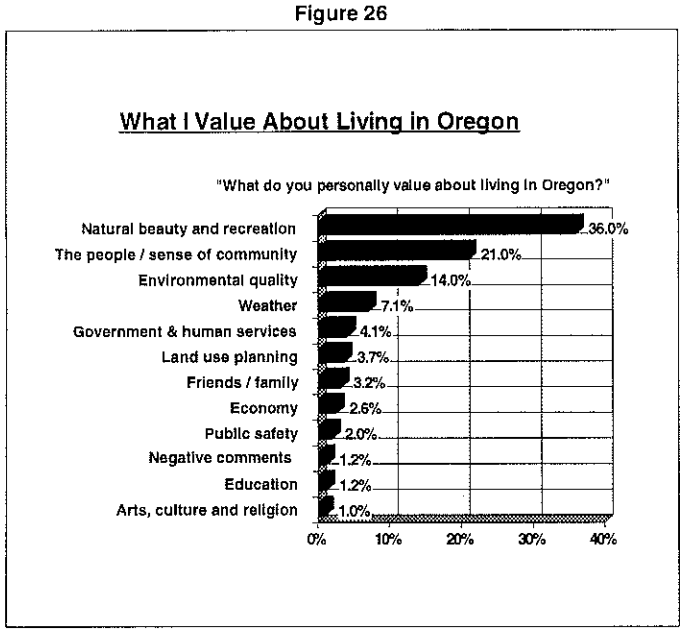
with the level of support for educational change, suggests that participants see an integral tie between education and employment. Many would argue that this strong relationship has not always existed in the minds of Oregonians.

The Environment

Oregonians have a strong commitment to environmental quality and to the physical beauty of the state. There is ambivalence about the polar extremes of arguments regarding the environment, but there is clear and pervasive concern for the environment. (Regional variations on this theme will be discussed in the Regional Divisions section of the key findings.) "Concern for the environment" was the third leading value among the 10 personal values. The environment was among the issues mentioned most often when participants were asked "If you could fix anything about Oregon, what would it be?"

What I Value About Oregon

Figure 26

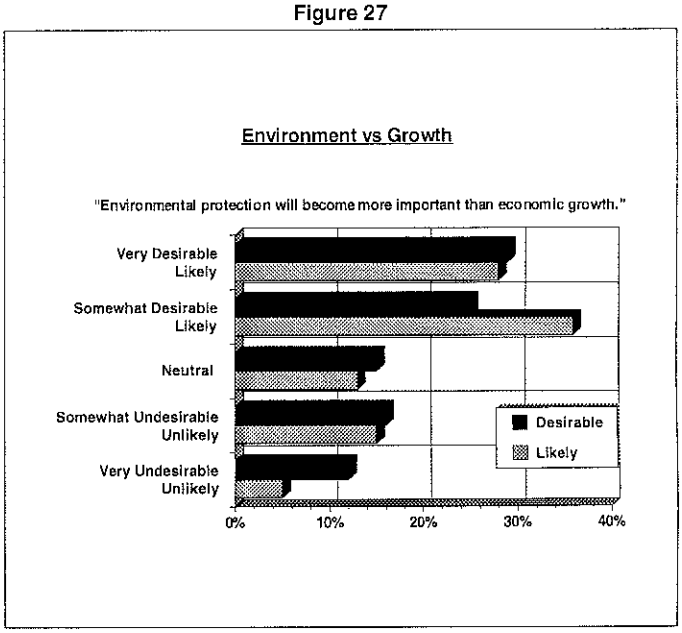


When asked the open-ended question, "What do you personally value about living in Oregon?" (Figure 26), fully 36 percent gave responses that fell within the category of "Natural Beauty and Recreation." Indeed, 50 percent of the responses fell within the category of the environment.

Environment vs. Growth

Much of the debate about Oregon's environment pits the environment against the economy. In an effort to probe that issue more deeply, the study asked a series of questions designed to press participants to make difficult choices. In response to the statement, "Environmental protection will become more important than economic growth" (Figure 27), 54 percent of the participants considered environmental protection very to somewhat desirable over the next 10 years, and 64 percent considered it very to somewhat likely to occur. (There is considerable regional variation on this question which will be discussed later.)

Figure 27



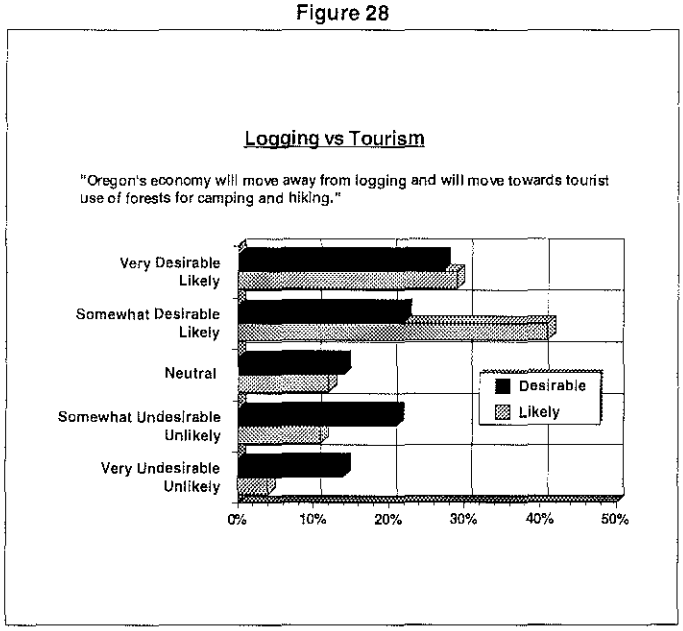
The environment was mentioned in 10 percent of the responses to the open-ended question "What one thing would you fix about Oregon?" This ranked it in the top seven categories of responses.

Logging vs. Tourism

The only question in the study which dealt specifically with logging juxtaposed logging and tourism in an effort to probe both desires and expectations (Figure 28). Participants found the statement, "Oregon's economy will move away from logging and will move towards tourist use of forests for camping and hiking" to be substantially more likely (70 percent very to somewhat likely) than desirable (49 percent), suggesting a degree of resignation. While there are differences among the

regions of the state on this question, the differences are less pronounced than might be imagined on the basis of conventional wisdom.

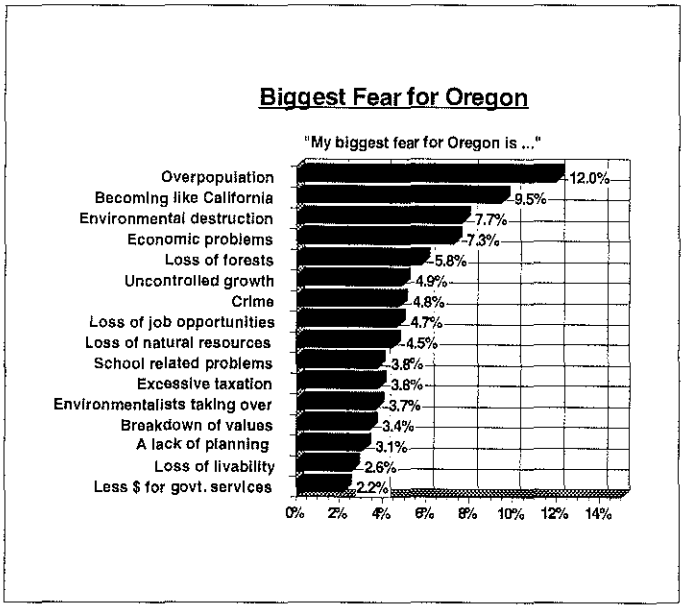
Figure 28



Biggest Fear for Oregon

Oregonians are clearly concerned about the the future's impact upon the environmental quality of the state. One of the unique techniques used in the study was open-ended sentence completions. The partial sentence, "My biggest fear for Oregon is...," produced responses that were largely indications of concern about the environment and the effects of future population growth.

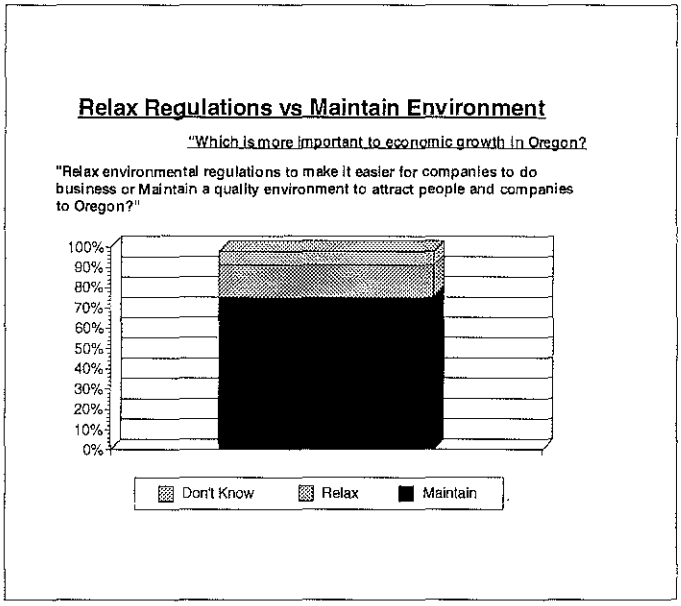
Figure 29



Relax Regulations or Maintain Environment

Figure 30 represents a slightly different twist. Given two alternatives, participants were asked to pick the one which would more likely lead to economic growth. In this case, 75 percent of the participants felt that "Maintaining a quality environment to attract people and companies to Oregon" would succeed whereas 16 percent chose "Relaxing environmental protection regulations to make it easier for companies to do business."

Figure 30



Finally, when asked to use one word to describe Oregon, participants used terms which describe positive physical qualities, further indicating a strong affinity for Oregon which goes beyond human additions to the landscape. " Beautiful" was the word most often mentioned.

Regional Division

Regional divisions in Oregon are largely founded on issues of economic insecurity resulting from threats to the natural resource base of the non-urban economy. While there are clearly demographic and life-style differences among the regions of the state, economic insecurity appears to be the most significant basis for attitude differences. On many key issues, such as the economy and education, there is little difference.

Personal Values - By Region

The table below demonstrates the significant differences among regions on the scaled comparisons of personal values. The most obvious differences exist in the values of "Concern for the environment," ranked third by the Metro region and eighth by the East region, and "Being economical or thrifty," which is ranked seventh by the Metro region and third by the East region. Metro region sentiment on "Concern for the environment" was sufficient to raise the issue to third in the statewide weighted sample despite its lower rating by the East region. Some might suggest that "Being economical or thrifty" is seen less as a value than as a necessity for many of those participants from the East region.

Figure 31

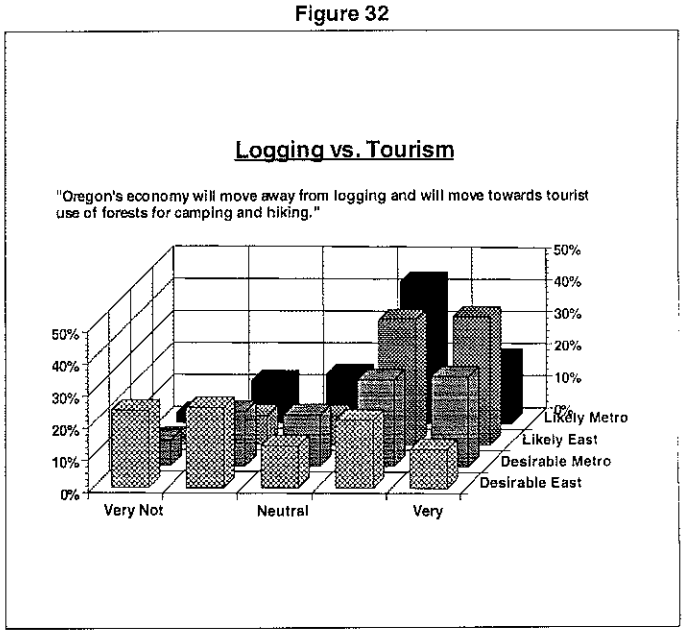
Personal Values - Ranked by Region

	METRO	WEST	SOUTH	EAST
Participation in family	1	1	1	1
Career or job opportunity	2	2	2	2
Concern for the environment	3	4	5	8
Practice of religion or spirituality	4	5	4	4
Charitability to others	6	3	3	6
Independence of self	5	6	9	5
Being economical or thrifty	7	7	8	3
Seclusion, solitude or privacy	8	10	7	7
Supporting your community	9	8	6	9
Diversity of people	10	9	10	10

Logging vs. Tourism

Not surprisingly, metropolitan area participants look at the question of logging and tourism differently from those in other regions of the state. Figure 30 shows the two regions of the state which exhibited the greatest difference on the statement "Oregon's economy will move away from logging and will move towards tourist use of forests for camping and hiking." While there is clearly a difference, both in the likelihood of this statement and its desirability, conventional wisdom might suggest a greater difference. Furthermore, East region participants felt that the above statement was more likely to occur than their counterparts in the Metro region. This may be a reflection of reality, but it may also reflect a degree of resignation.

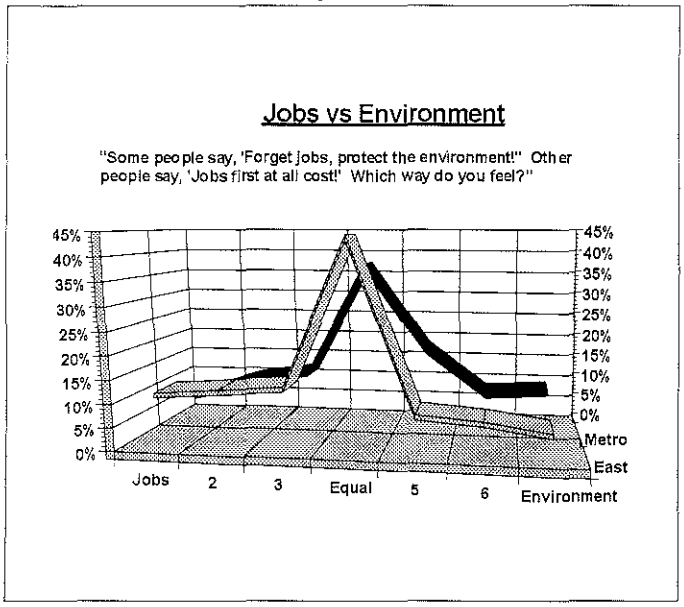
Figure 32



Jobs vs. Environment

"Some people say, 'Forget jobs, protect the environment!' Other people say, 'Jobs first at all cost!' Which way do you feel?" This statement reflects polar extremes that few people wish to chose between. Nevertheless, it is interesting to note how little real difference there is between those two regions of the state which exhibit the greatest polarity: Metro and East (Figure 33). Essentially, most people, regardless of region, see themselves in the middle on this question.

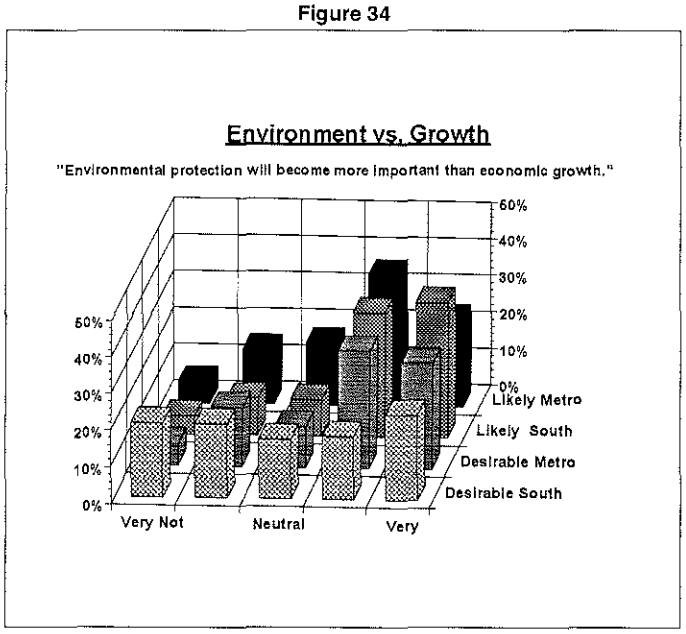
Figure 33



Environment vs. Growth - Metro vs. South

A look at the regional differences on the question "Environmental protection will become more important than economic growth" (Figure 34) suggests again that there is a dichotomy, but perhaps less than one might expect. The two most polarized regions on this question, Metro and South, reflect responses similar to the earlier timber question; those in the resource dependent region (in this case the South) see the above statement as more likely than their Metro region counterparts and less desirable.

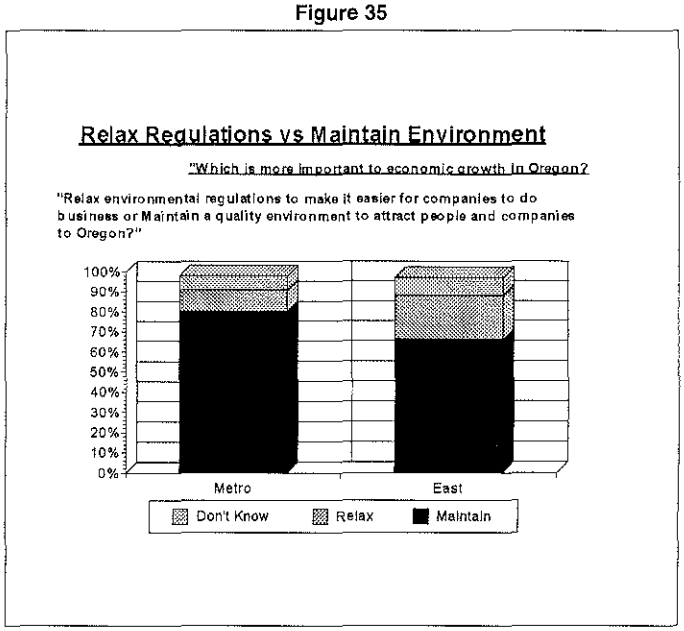
Figure 34



Relax Regulations vs. Maintain Environment

Figure 35 provides what may be a more interesting look at this theme of differences among the regions of the state on environmental issues. Two alternatives are posed in answer to the question "Which is more important to economic growth in Oregon?" The first alternative, "Relax environmental regulations to make it easier for companies to do business," was selected by 22 percent of the East region participants vs. 11 percent of the Metro region participants. The second alternative, "Maintain a quality environment to attract people and companies to Oregon," attracted 80 percent of the participants from the Metro region and 66 percent of the participants from the East region. A difference exists to be sure, but by no means an overwhelming difference.

Figure 35



The Gender Gap

Differences in values and beliefs are greater between men and women than they are among any of the other demographic categories in the study. While it is true, as conventional wisdom might suggest, that women tend to be more focused on values of unique importance to the family, it is particularly interesting to note that seldom did men feel that any personal value, personal activity or government service was more important than did women.

The next three tables show those personal values, personal activities, and government services where there exists a noteworthy difference of 9 percent or more.

Personal Values

Figure 36

Areas of Noteworthy Difference

Personal Values

	Women	Men
Participation in family	85.0%	76.0%
Charitability to others	59.0%	43.0%
Practice of religion or spirituality	56.0%	39.0%
Being economical or thrifty	51.0%	35.0%

There is little in Figure 36 to challenge conventional wisdom.

Personal Activities

Again, each personal value measured in the scaled comparisons was assigned two personal activities as a way to triangulate findings. Essentially, the findings of difference between men and women on the scaled comparison of personal activities (figure 37) associates closely with the differences found in the personal values list.

Figure 37

Areas of Noteworthy Difference

Personal Activities

	Women	Men
Spending time with family	81.0%	67.0%
Spending time with parents	47.0%	35.0%
Doing something just for myself	38.0%	26.0%
Enjoying different kinds of people	36.0%	24.0%
Comparing prices at the store	33.0%	18.0%
Attending religious services	33.0%	22.0%
Donating time to those in need	27.0%	18.0%
Using coupons when shopping	20.0%	9.0%

Government Services

While many of the responses listed in Figure 38 are probably predictable, it might be surprising to some to see the significant differences in "Fire and emergency services," "Police services," and "Courts, prisons and jails." These differences obviously suggest that women indeed feel strongly

Figure 38

Areas of Notewothy Difference

Government Services

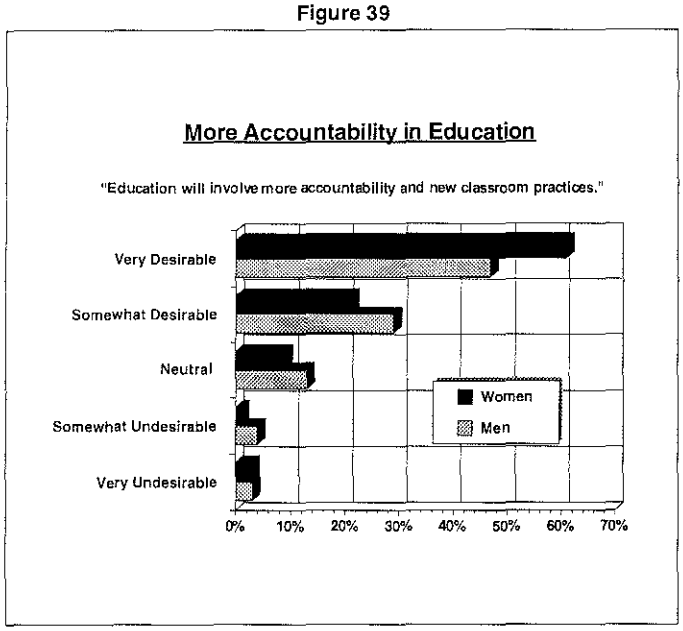
	Women	Men
Fire and emergency services	91.0%	82.0%
Primary and secondary education	86.0%	76.0%
Health and mental health services	76.0%	62.0%
Police services	76.0%	63.0%
Employment and training	71.0%	58.0%
Children's services	68.0%	49.0%
Affordable housing	66.0%	49.0%
Higher education	62.0%	52.0%
Community colleges	55.0%	41.0%
Senior services	54.0%	37.0%
Courts, prisons and jails	53.0%	43.0%
Services for low income	49.0%	34.0%
Health and safety regulation	46.0%	35.0%
Libraries	46.0%	34.0%

about issues relating to personal and/or family security.

Accountability in Education

Perhaps consistent with a heightened concern for primary and secondary education in general, women responded more favorably to the statement, "Education will involve more account-

Figure 39

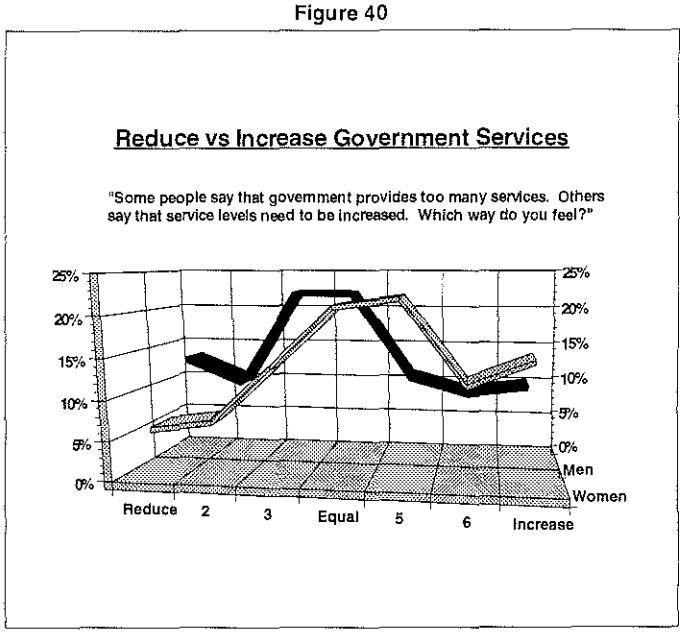


ability and new classroom practices." While both men and women feel that this statement is desirable, women clearly feel so even more.

Reduce vs. Increase Government

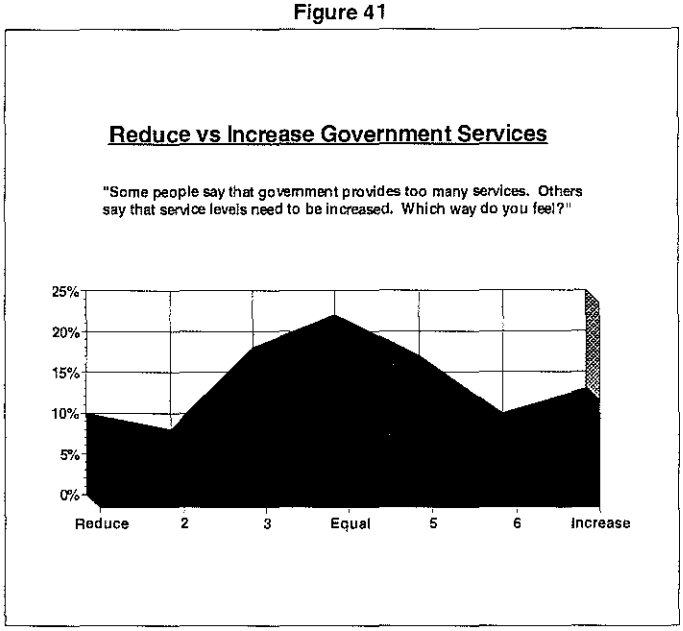
No question in the study more properly displays the challenge to government leaders than the one portrayed in Figure 40, "Some people say that government provides too many services. Others say that service levels need to be increased. Which way do you feel?" There are several qualities to the response to this question that merit attention. First, the responses for each do not exceed 22-1/2 percent, which suggests either a general ambivalence or at least a lack of strong consensus. Second, the bi-modal appearance at the end of each line (the slight uptick on each end of the scale) is comprised of women at one end of the spectrum and men at the other. The statewide results on this same question (Figure 41) demonstrate the nearly perfect symme-

Figure 40



try of responses. Again, the high point at the right end of the scale is primarily composed of women,

Figure 41



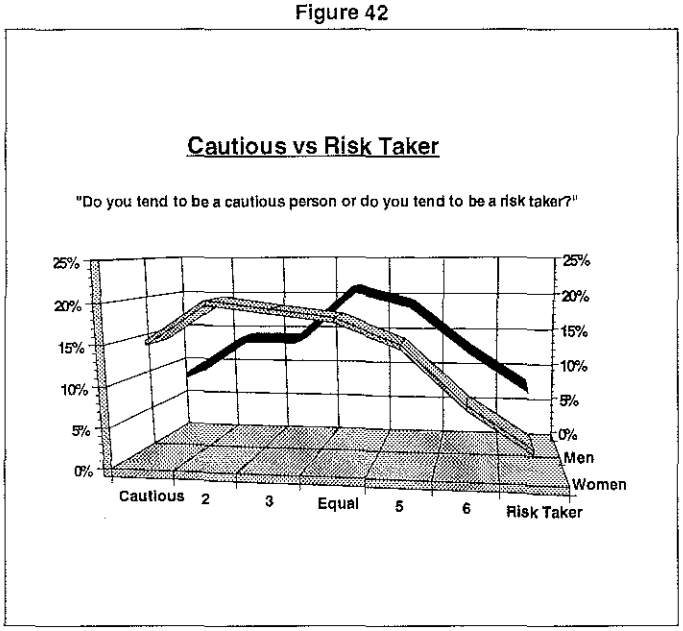
and the high point at the left end of the scale is primarily composed of men.

Cautious or a Risk Taker

A series of personality preferences in the study included the question, "Do you tend to be a cautious person or do you tend to be a risk taker?" (Figure 42). One wonders, when looking at this

graph, what it would have looked like, say, 10 years ago and whether, in another 10 years, there will be much difference at all. Conventional wisdom suggests that these lines are merging; therefore to the extent that women increasingly see themselves as

Figure 42



risk takers, the values for which women exhibit stronger feelings than men are values which might well be more widely represented in public policy. It is our intent that the study serve as a benchmark for future assessments which may resolve the above speculation.

Newcomers

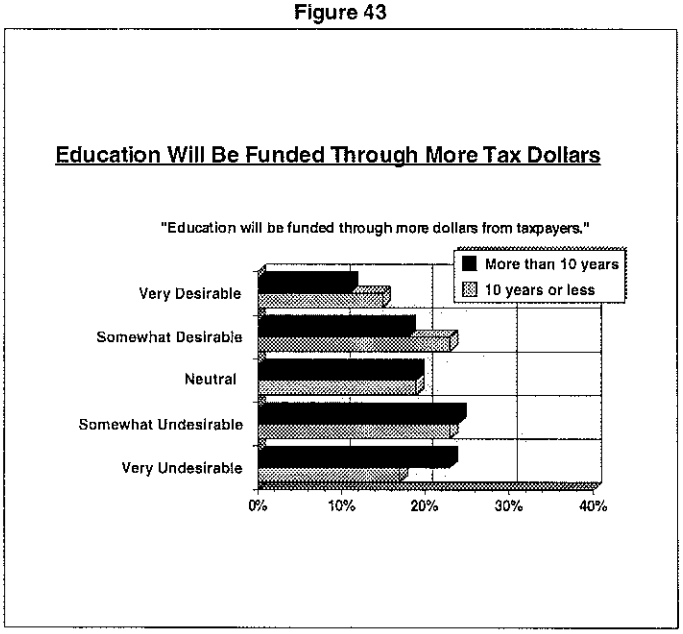
Newcomers, as used here, mean people who have lived in Oregon for less than 10 years. As a group they account for 22 percent of the study participants. The impact of newcomers on Oregon is subject to considerable debate and speculation. Most Oregonians are familiar with the caricature of the Southern California refugee, cash rich from inflated real estate sales, buying a piece of Oregon Nirvana, and then erecting walls to prohibit all additional growth and development.

Participants in this study, who represent a near mirror of the 1991 census update, reflect something different than the above caricature. Newcomers are younger, on average, than the longer term residents of the state (the overall average length of residence in Oregon is 26.5 years). To the extent that there are differences in values and beliefs between newcomers and longer term residents, such differences may well result from differences in age or income more than length of residence in Oregon.

More Tax dollars for Education

Newcomers typically exhibited greater enthusiasm for government services and spending public money. Figure 43 suggests greater interest (although hardly overwhelming) in supporting additional tax dollars for education.

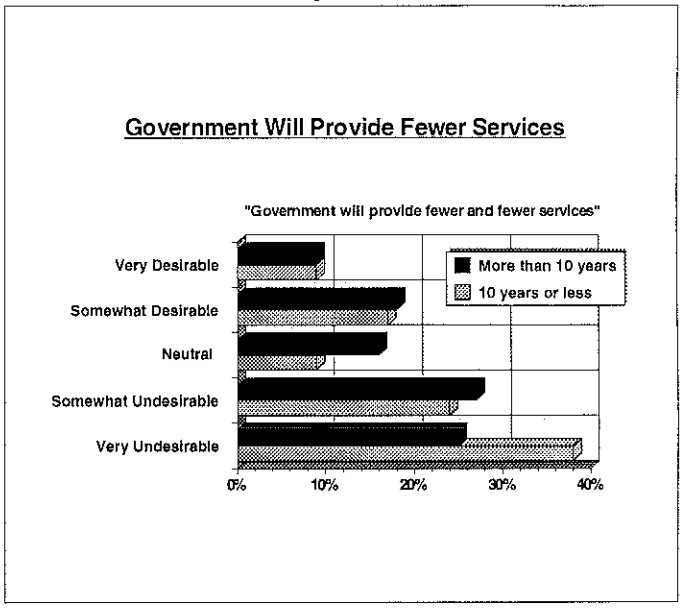
Figure 43



Fewer Services

Newcomers are much less enthusiastic about the idea that "Government will provide fewer and fewer services" than longer term residents.

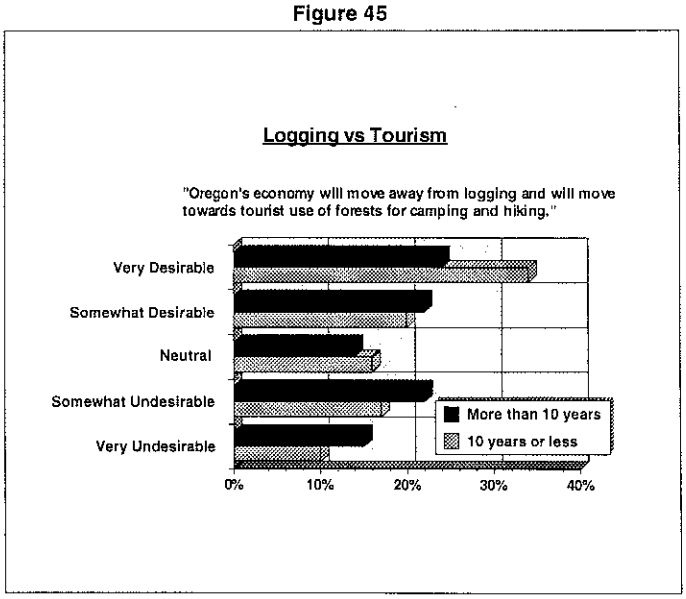
Figure 44



Logging vs. Tourism

It is typically on environmental issues that nwcomers are presumed to share significantly different values. Figure 45 does suggest a difference

Figure 45

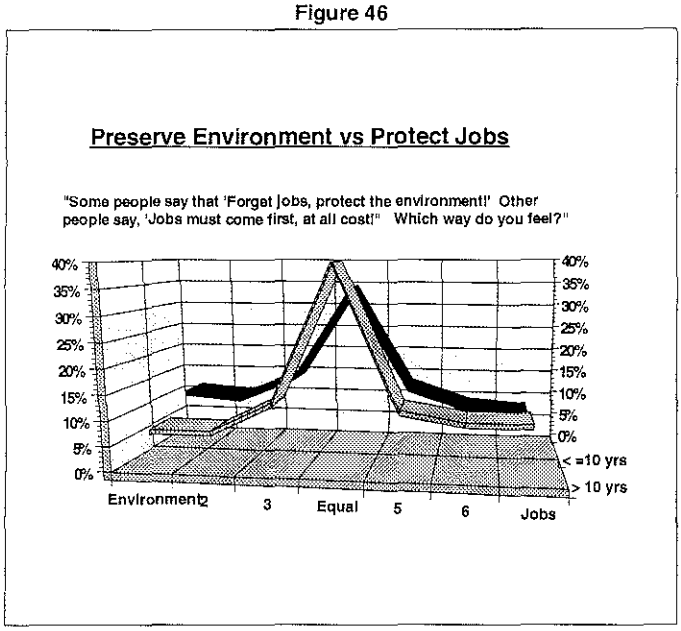


on the statement, "Oregon's economy will move away from logging and will move towards tourist use of forests for camping and hiking." Yet when one considers that relatively few people have moved to Oregon within the last 10 years to work in the timber industry, these differences don't seem terribly significant.

Environment vs. Jobs

Newcomers exhibit some differences in the scenario of preserving the environment versus protecting jobs (Figure 46), but perhaps less than conventional wisdom might suggest.

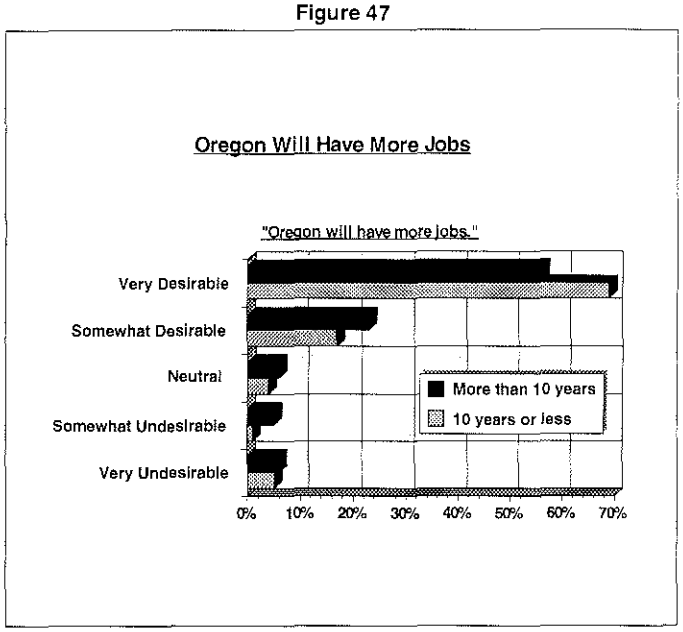
Figure 46



More Jobs

Again, contrary to the popular conception, nwcomers feel that the statement, "Oregon will have more jobs" is even more desirable than longer term residents. The notion that newcomers are hostile to economic development or that they are significantly more concerned about the environment is not born out by the data in this study. Figure 47 suggests that while participants in general support the notion that Oregon will have more jobs, newcomers feel even more strongly about that statement.

Figure 47



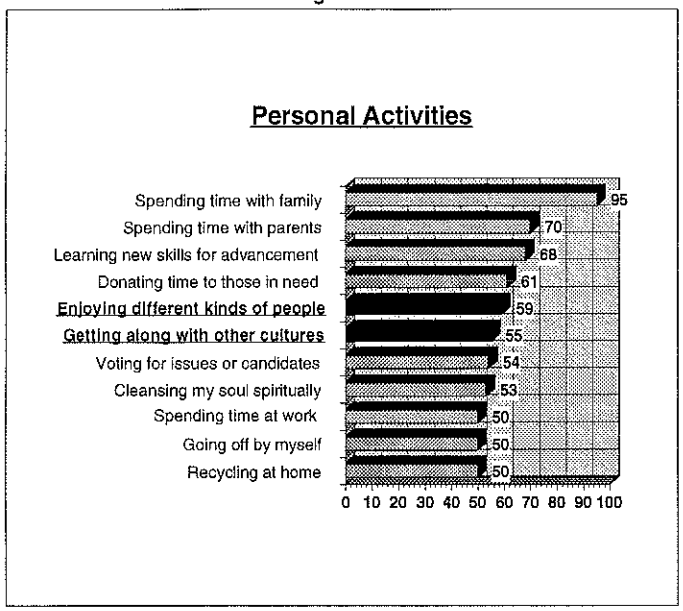
But Do They Vote?

In the May 1992 primary, only 46 percent of newcomers voted as opposed to 56 percent of longer term residents.

Diversity

Participants appear to be somewhat ambivalent about the benefits of a diverse population. "Diversity of people" was the least important value in a list of 10, but "Enjoying different kinds of people" and "Getting along with other cultures" (the two personal activities which were paired with "Diversity of people") rated highly on this partial list

Figure 48



of 20 personal activities.

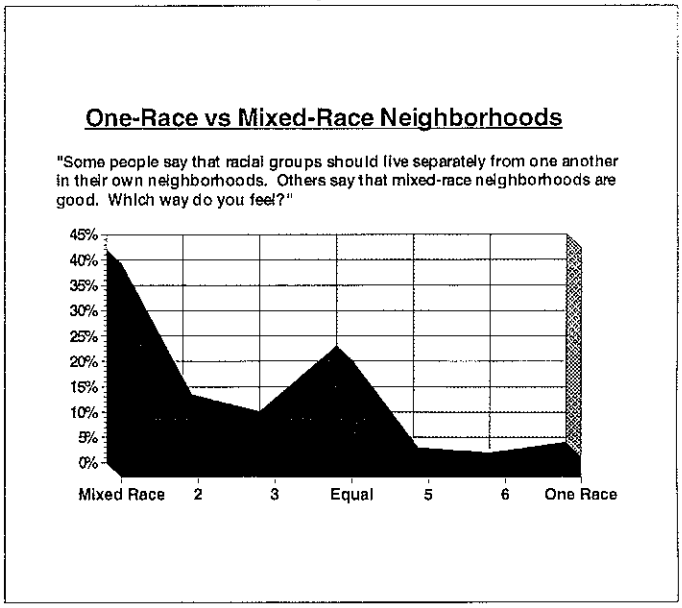
Mixed Race Neighborhoods

In regard to single- versus mixed-race neighborhoods (Figure 49), 42 percent of the participants placed themselves on the mixed race end of the scale, while only 4 percent selected single-race neighborhoods. Indeed, only 9 percent were on the entire half of the scale favoring single-race neighborhoods.

More Racial Diversity

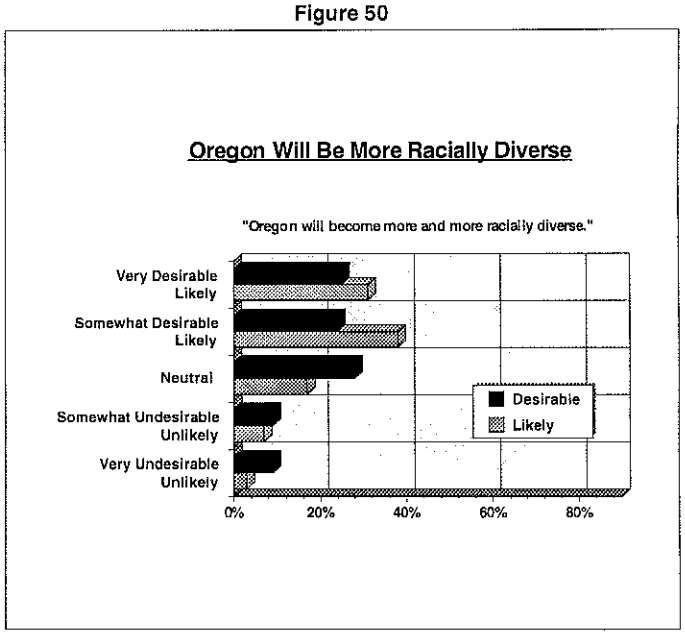
Participants were asked to assess the likelihood and indicate their preferences on the statement "Oregon will become more and more racially diverse." Clearly, the statement is likely to come true. Fewer people consider this to be desirable, although 49 percent felt that this was either very or somewhat

Figure 49



desirable. Eighteen percent felt that this was very to somewhat undesirable.

Figure 50



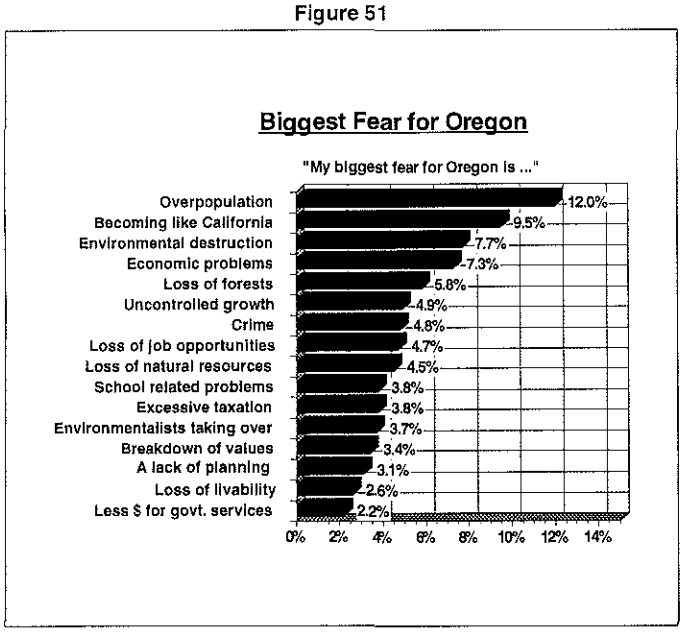
Growth Management

Oregonians are very concerned about the effects of population growth on Oregon's environment, and on the overall quality of life. They are somewhat pessimistic about the prospects for resolving many of these issues and they appear unenthusiastic about at least some of the current prescriptions.

My Biggest Fear

When asked to identify their biggest fear for Oregon (an open ended question), participants provided responses that related predominantly to growth. The leading aggregation of responses (Figure 51) fell into the category "overpopulation" fol-

Figure 51

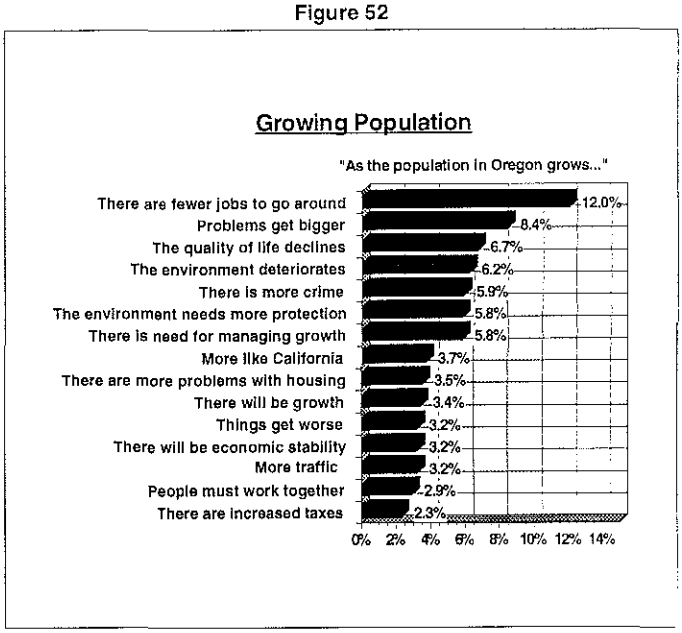


lowed closely by "Becoming like California" which, within the context of the question, must be taken as a growth related concern.

A Growing Population

Given the concerns expressed about Oregon's future, and the essentially negative mentions relating to population growth, it is particularly interesting to note the responses to another open-ended sentence, "As the population in Oregon grows...." Virtually all of the responses are nega-

Figure 52

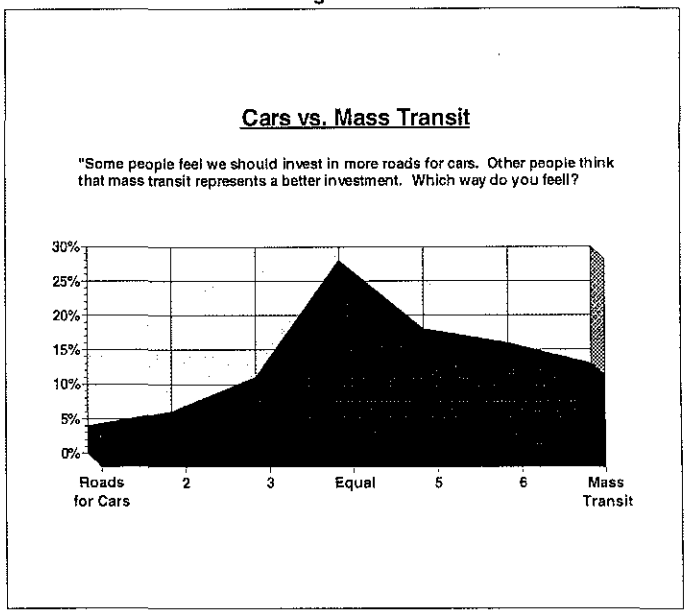


tive, and express concern about the effects of growth. It is particularly interesteing that the belief "There are fewer jobs to go around", is the largest response category. This is not consistent with Oregon's experience over the last decade (i.e. population growth and net job growth). Again, there are almost no virtues attributed to population growth.

Cars vs. Mass Transit

On the question of moving by car or mass transit (Figure 53), participants tended to favor transit. Did respondents feel this way because they

Figure 53

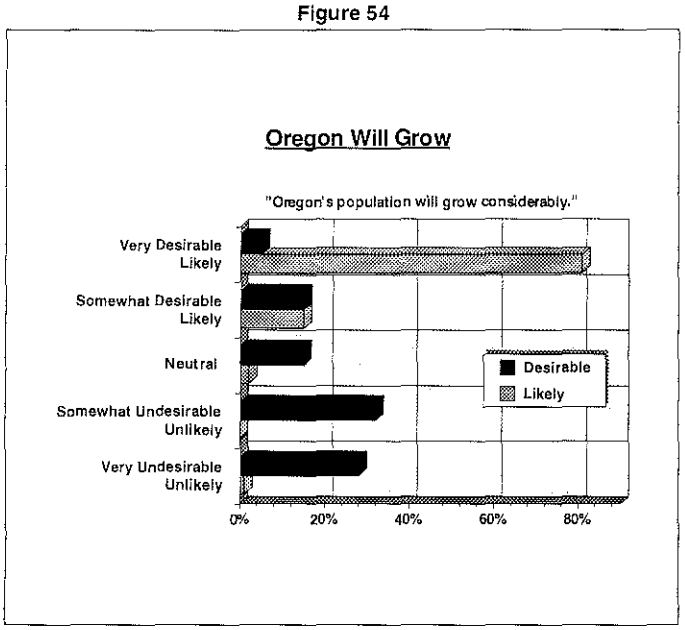


want to personally take advantage of transit (i.e. ride the bus or light rail) or is it because they see transit as a potential antidote to the ill effects of growth (i.e. they want *other people* to use mass transit)?

Will Oregon Grow?

Expectations about growth seem to be consistent with virtually all projections. When asked to respond to the statement "Oregon's population will grow considerably," participants were unambiguous (Figure 54). Ninety-six percent said that it

Figure 54



was very or somewhat likely that "Oregon's population will grow considerably," and yet only 20 percent felt that the same statement was either very or somewhat desirable.

People Will Leave - People Will Come

In keeping with earlier responses, participants clearly have strong expectations about growth. Asked to agree or disagree whether "More people will leave my community than will come," 69 percent said they disagreed strongly to somewhat.

On the other hand, when confronted with the statement "More people from out of state will move into my neighborhood," 80 percent agreed strongly or somewhat. It should be noted that while virtually everyone agrees that immigration will represent a portion of Oregon's future population growth, it accounted for less than 20 percent of our growth over the last 10 years.

Figure 55

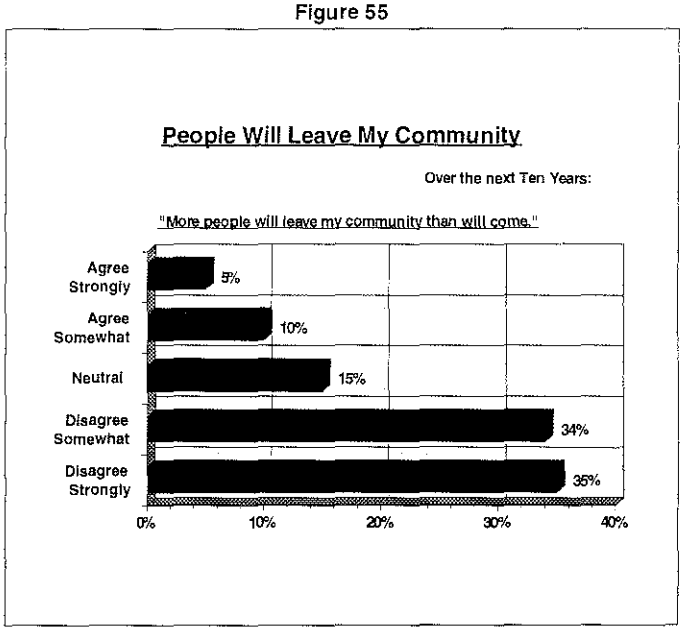
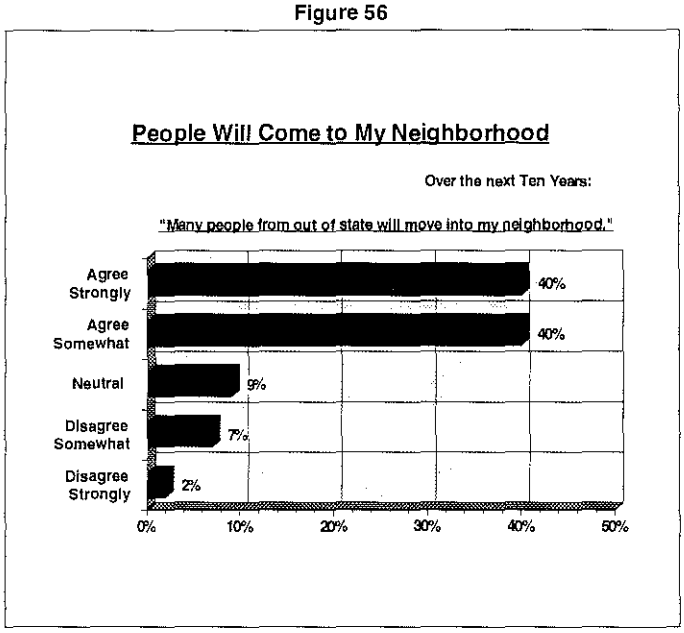


Figure 56



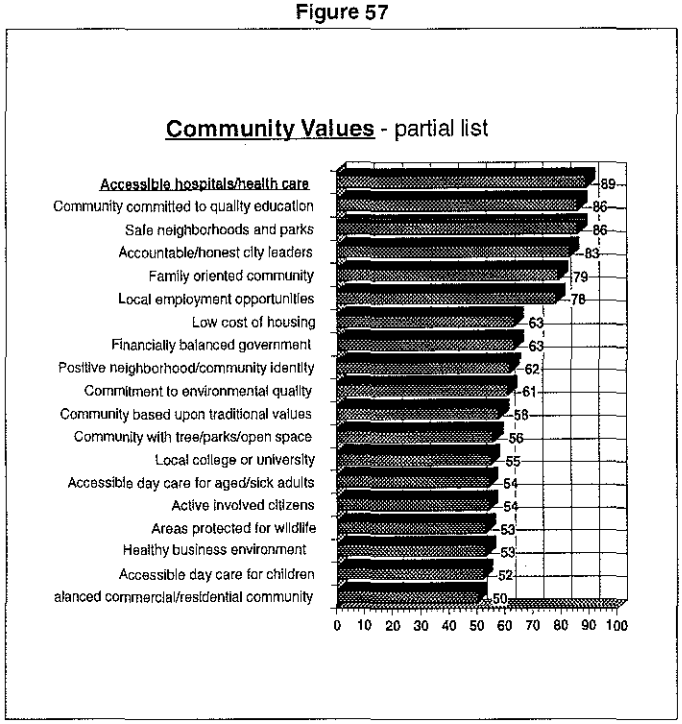
Health Care

Oregonians express significant concern about health care, particularly with respect to cost and access.

Access

The following graph from the scaled comparisons segment of the study identifies "Accessible hospitals/health care" as the leading value on a list of 32 community values. This was consistent throughout the state.

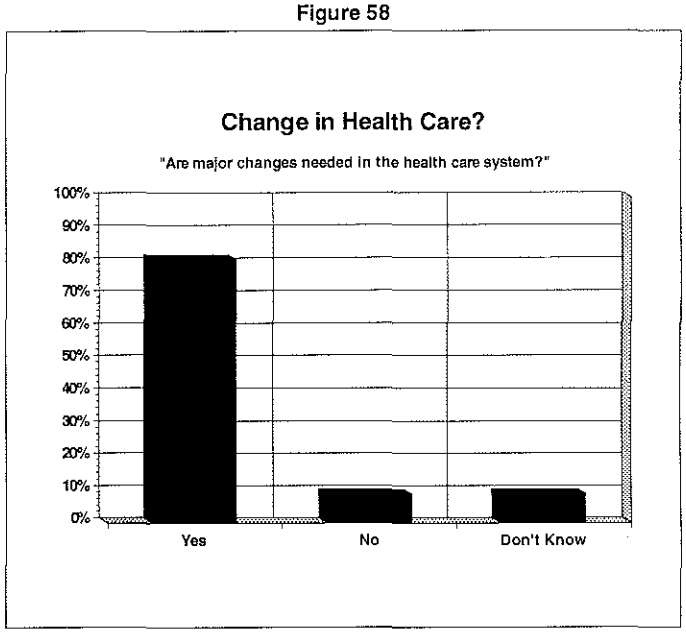
Figure 57



Change in Health Care?

Participants were asked whether "...major changes were needed in the health care system?". Eighty one percent of respondents said yes. This is not particularly surprising given the general response to questions about institutional change seen elsewhere in the study (i.e. education).

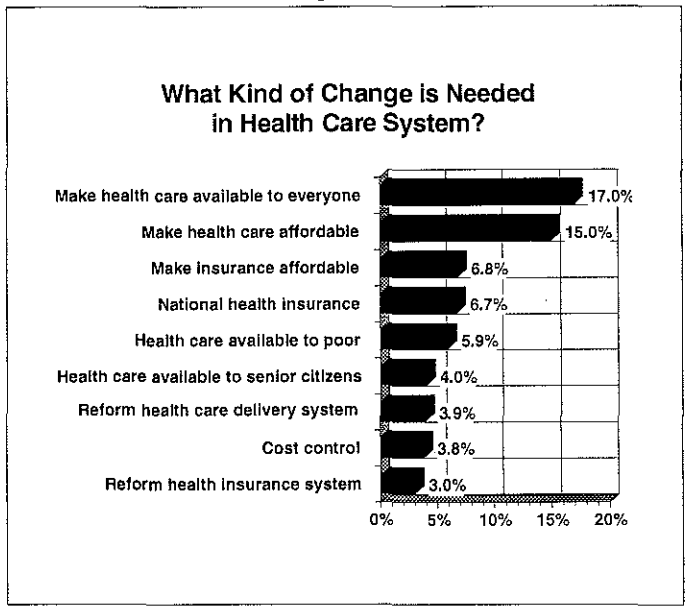
Figure 58



What Kind of Change is Needed?

When those responding yes to the question "Are major changes needed in the health care system?" were asked "What kind of change is needed in the health care system"?, the primary responses related to access and affordability.

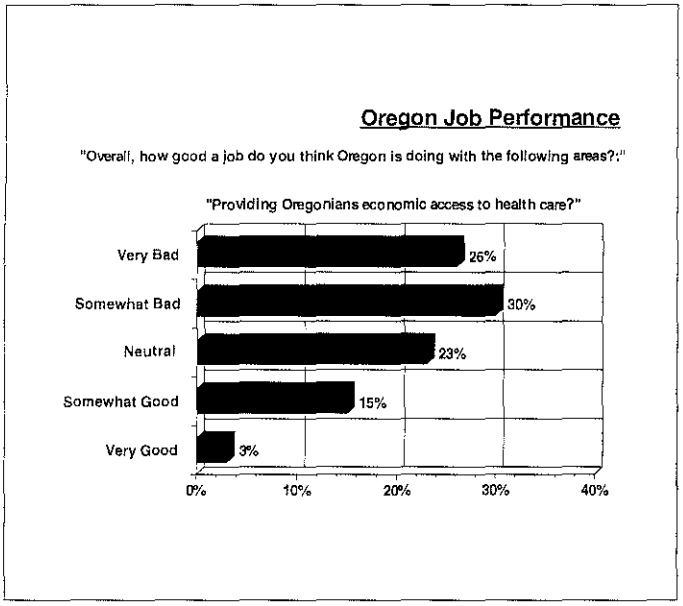
Figure 59



Providing Economic Access

"Providing Oregonians economic access to health care"? was rated very poorly by Oregonians on the Oregon Job Performance series of questions asked in the survey. In fact only three items out of nineteen total were below this item in the overall

Figure 60



ranking.

Basic Health Care Bill be More Affordable

In response to the statement, "A greater percentage of Oregonians can afford basic health care" (Figure 61), participants were not particularly optimistic. This is useful information because this statement represents a benchamrk which the state has set for itself.

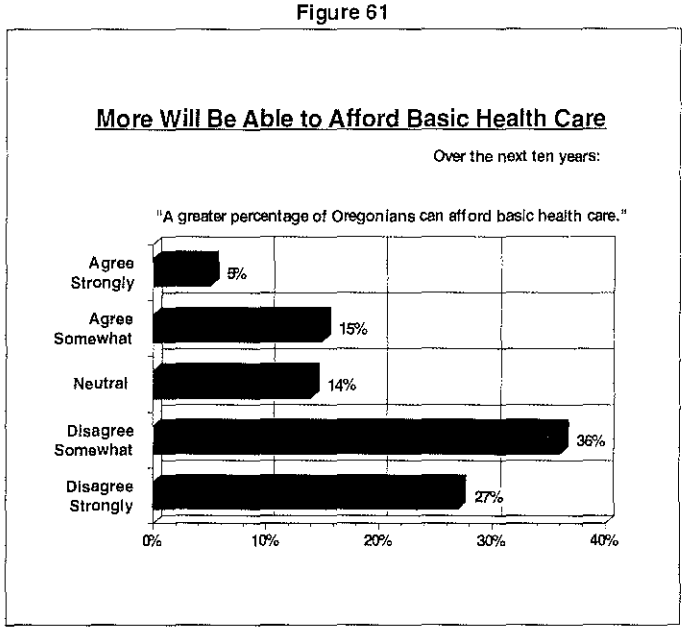
Rationing

When asked to rate both the likliness and desirability of the statement "Rationing of health care services to terminally ill and elderly will become commonplace" participants reacted strongly. Essentially, "rationing" is considered likely and undesirable.

National or State Health Insurance

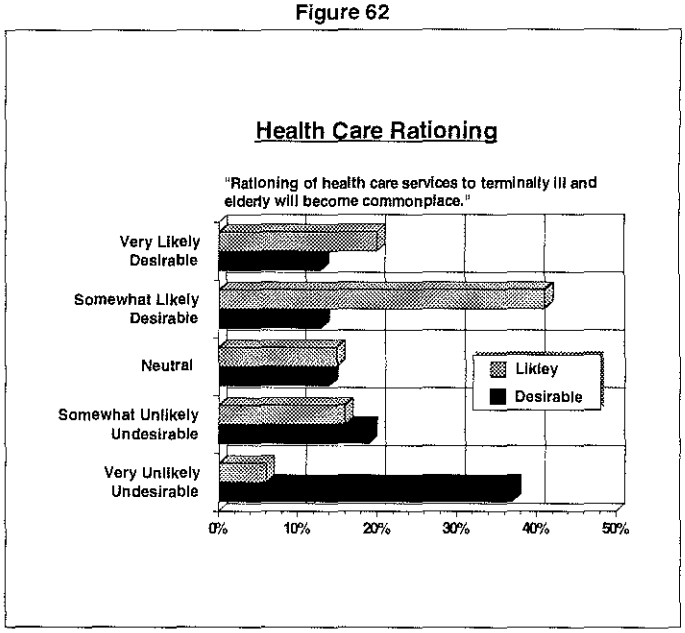
In what may well reflect nervousness about

Figure 61



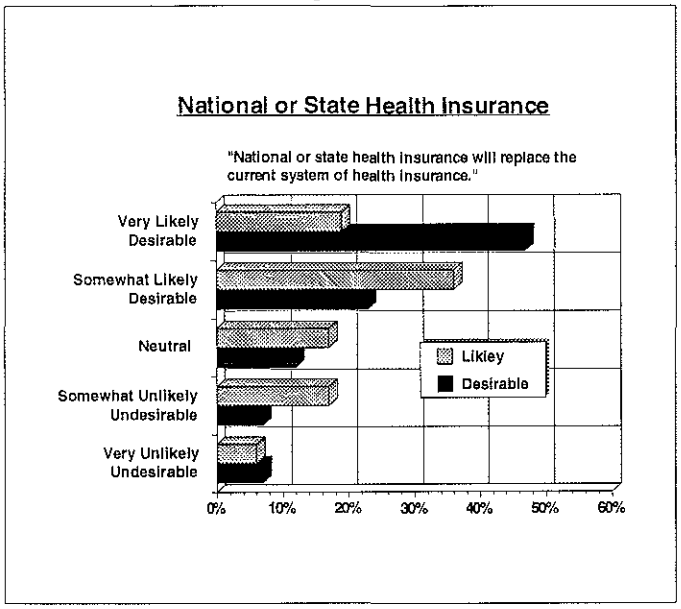
both the affordability of health care and access to health care, respondents indicated a strong preference for national or state health insurance. While

Figure 62



considering the statement "National or state health insurance will replace the current system of health insurance" to be quite a bit more desirable than likely, participants nevertheless felt that it was both likely and desirable (Figure 63 - next page).

Figure 63


National or State Health Insurance
"National or state health insurance will replace the current system of health insurance."
Very Likely Desirable
Somewhat Likely Desirable
Neutral
Somewhat Unlikely Undesirable
Very Unlikely Undesirable
Likley
Desirable
0%
10%
20%
30%
40%
50%
60%

Oregon Voter Profile

Voters matter in Oregon. Since the early part of this century, Oregonians have possessed the initiative, referendum and recall. While these three different vehicles of direct democracy have been used somewhat sparingly by Oregonians (at least in comparison with our neighbor to the south), their mere presence on the scene serves as a constant reminder of the critical importance of voters in Oregon.

This profile divides participants into three separate classes: those who voted in the May 1992 primary, those who are registered to vote but did not vote in the May 1992 primary, and those who are not registered. The May 1992 primary was a relatively low-turnout election which, therefore, serves to clearly distinguish those for whom voting is particularly important from those for whom it is not.

Figure 64 provides some basic demographic information about these three different groups. From the beginning of this examination, it becomes clear that the differences are not coincidental. Motivated voters (who represent 52 percent of our sample) are older, and have a higher household income. Figure 65 show the difference in marital status. Motivated voters are more likely to be married, and less likely to have experienced divorce.

Figure 64

OREGON VOTER PROFILE

	Motivated	Registered	Not Registered
Percent of Total	52%	33%	15%
Age	47.71	38.03	35.82
Income	37,694.54	32,832.25	26,595.55
# in Household	2.82	2.94	3.01
# Children	2.02	1.96	1.92

Figure 65

OREGON VOTER PROFILE

MARITAL STATUS	Motivated	Registered	Not Registered
Single, Never Married	10%	21%	23%
Single, Living with Someone	4%	9%	8%
Married	65%	51%	48%
Divorced or Separated	14%	17%	19%

Reinforcement for the notion that these differences between voters and non-voters amounts to a class difference comes in Figure 66 which shows information relating to housing. Seventy-five percent of participants who voted in the May 1992 primary own their home. Of those not registered to vote, only 41 percent own their own home. Moti-

Figure 66

OREGON VOTER PROFILE

HOUSING	Motivated	Registered	Not Registered
Single Family Home	74%	64%	57%
Mobile Home	10%	10%	17%
Apartment / Condo / Duplex	12%	21%	18%
Own	75%	57%	41%
Rent	24%	43%	57%

vated voters are significantly more inclined to live in a single family home than are non-voters, and not surprisingly they are significantly less inclined to have lived in either a mobile home or apartment than are non-voters.

The differences in educational attainment are equally compelling. Fully 78 percent of moti-

Figure 67

OREGON VOTER PROFILE

EDUCATIONAL ATTAINMENT	Motivated	Registered	Not Registered
Attended High School	3%	7%	17%
Graduated High School	17%	25%	28%
Post Secondary	78%	67%	49%

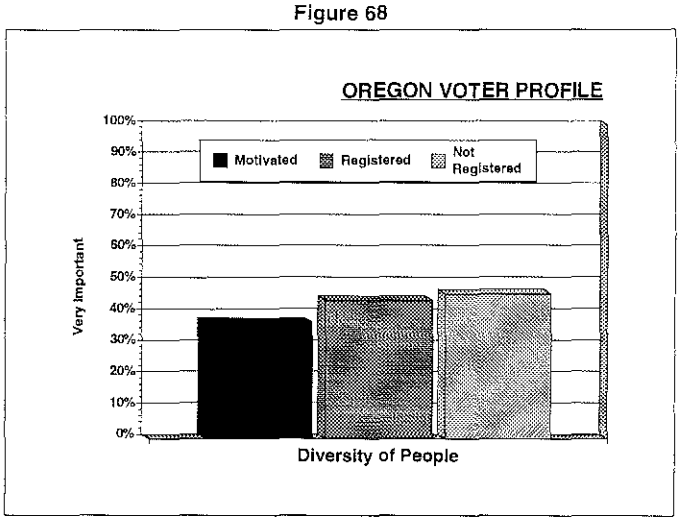
vated voters have attained some level of post secondary education as opposed to 49 percent of those not registered to vote.

As with the other demographic variables surveyed in the previous figures, the differences demonstrate a continuum, with motivated voters at one end, non-registered voters at the other end, and those registered but not voting in the middle. Furthermore there are clear economic and social implications for this continuum. Those who are older, have higher educational attainment, own property, have higher incomes, and have families are significantly more inclined to vote.

Diversity of People

The accompanying graphs will examine the extent to which each of the aforementioned classes feels that the topic of the graph is very important. The topic of Figure 68, for example, "Diversity of people," is one of the 10 personal values which were

Figure 68

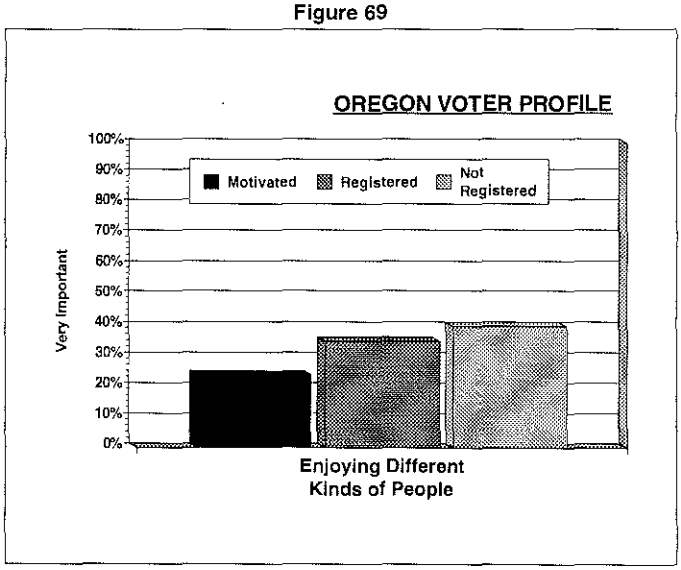


measured using both the scaled comparison technique and the conventional open- and close-ended questionnaire. Approximately 37 percent of motivated voters thought that "Diversity of people" was very important; 44 percent of those registered but not voting felt that "Diversity of people" was very important; 46 percent of those not registered to vote felt that "Diversity of people" was very important. The same continuum referenced earlier exists here as well.

Enjoying Different Kinds of People

These findings are similar to those above. That is, motivated voters are less inclined to rate as very important either "Diversity of people" or "Enjoying different kinds of people".

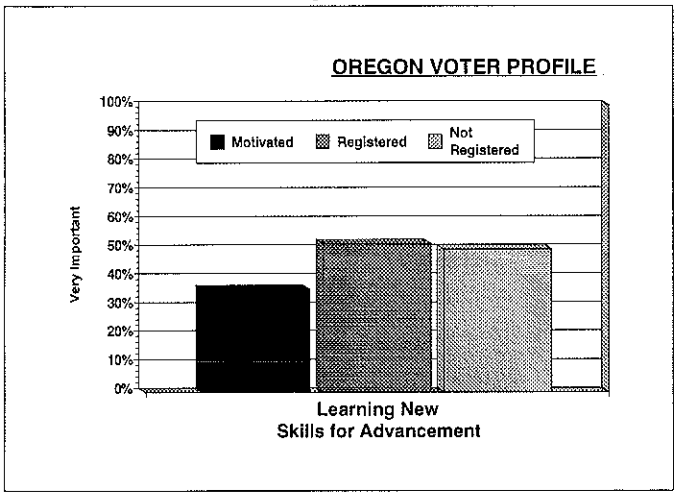
Figure 69



Learning Skills for Advancement

The earlier demographic profile might suggest that motivated voters are less concerned about "Learning new skills for advancement" because they are more likely to possess those skills than either those who neither registered or voted.

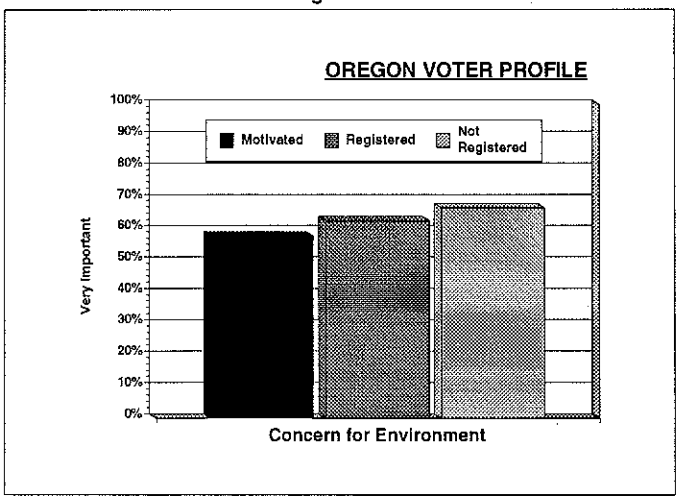
Figure 70



Concern for the Environment

While there are clearly differences here (Figure 72), each of the three different groups sees this value as very important.

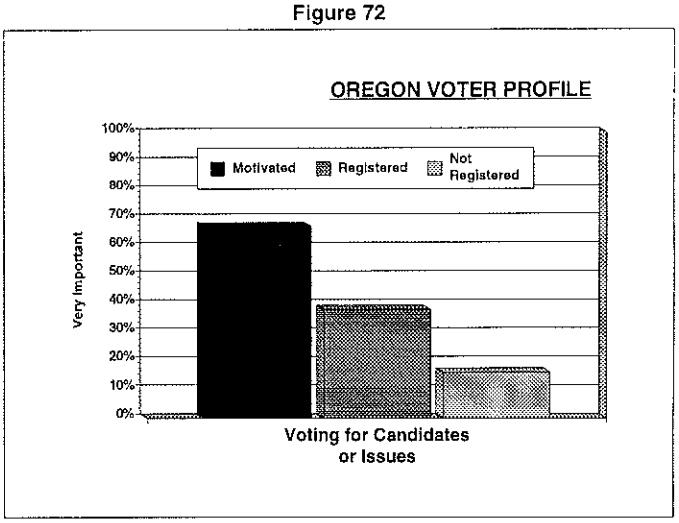
Figure 71



Voting for Candidates or Issues

The results of this graph (Figure 73) ought to be obvious, but it is useful in demonstrating strong internal consistency in the study data, and in

Figure 72

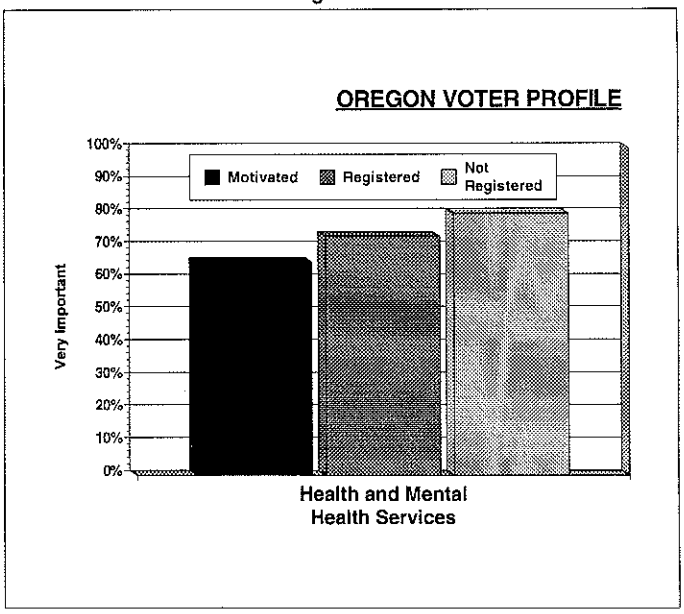


confirming another important sub-text to this profile of voters; people who don't vote are clearly more inclined to feel alienated from public participation.

Health and Mental Health Services

A clear difference exits between active voters and non-voters in virtually all areas of social service. Given the economic and social profile of these three groups it is interesting to note that those most in need or most aware of the need for these various social services are least likely to vote.

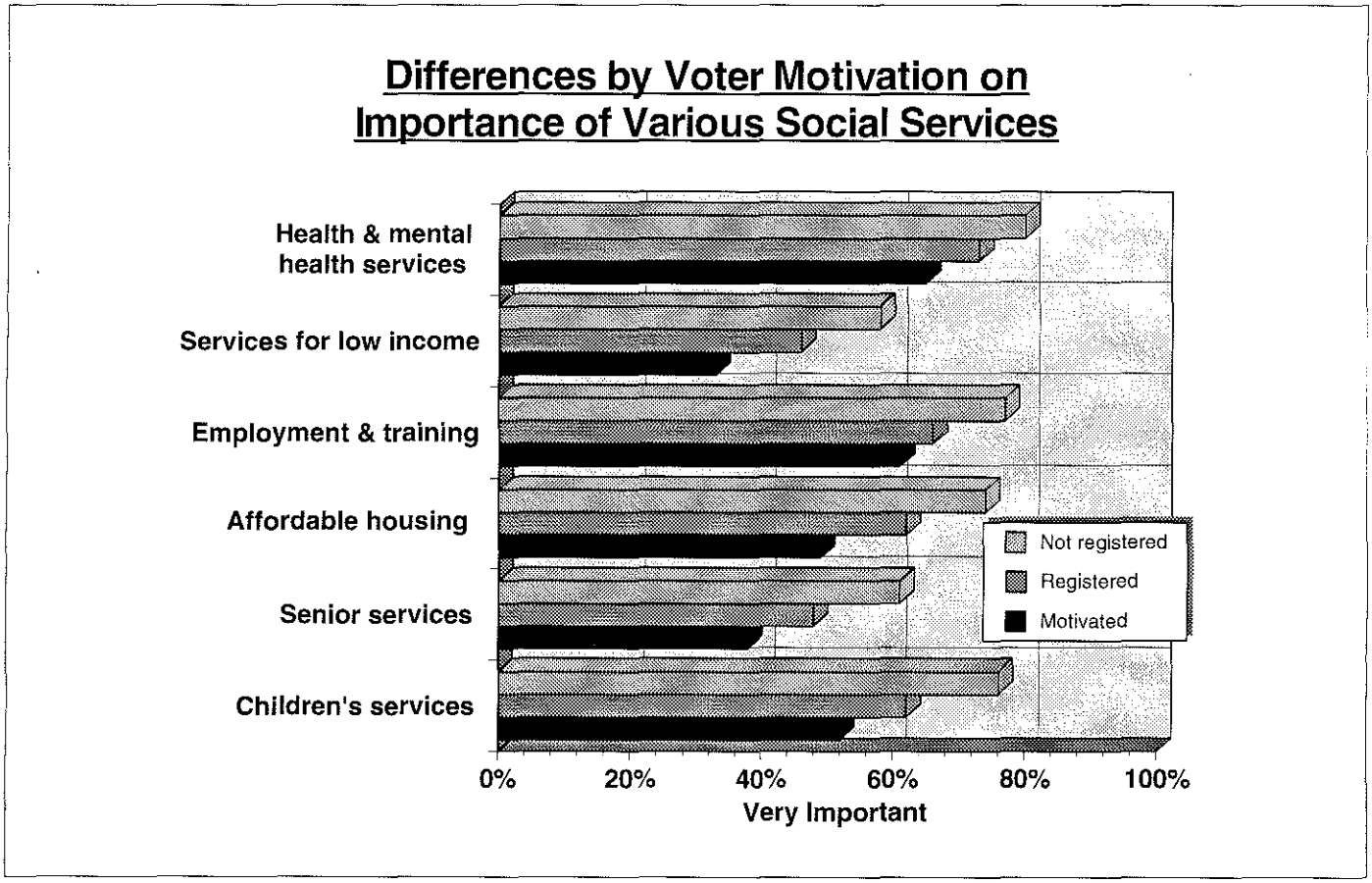
Figure 73



Social Services - Generally

A very clear pattern emerges when viewing the results portrayed in Figure 74. Each bar represents the extent to which that group (motivated , registered, or not registered) feel that the respective social service is very important. Those who are not registered to vote are more likely, sometimes significantly so, to indicate that social services are very important to a greater extent than those who are registered but did not vote in the May primary, or those who are registered and did vote in the May primary (motivated voters).

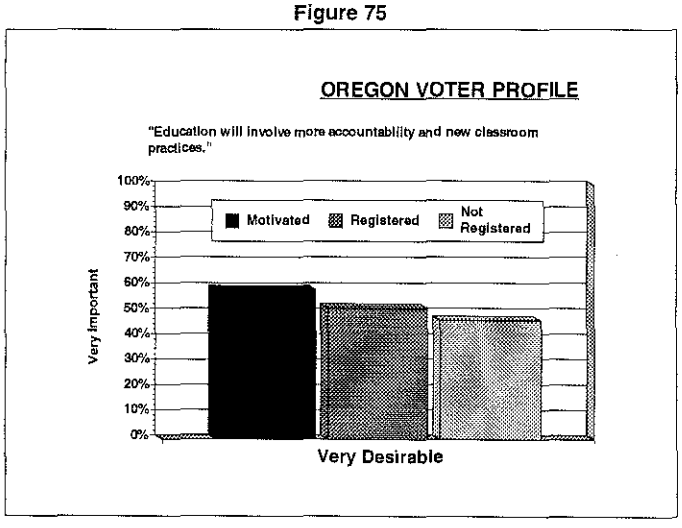
Figure 74



Educational Accountability

While it is clear that non-voters are more likely to express enthusiasm for social services (for which they arguably have greater need, or to which they are more aware), voters were more likely to express their support for accountability in education. While there was not a significant difference among these three classes of voters with respect to the importance of education overall, greater accountability in education clearly appeals more to the motivated voters.

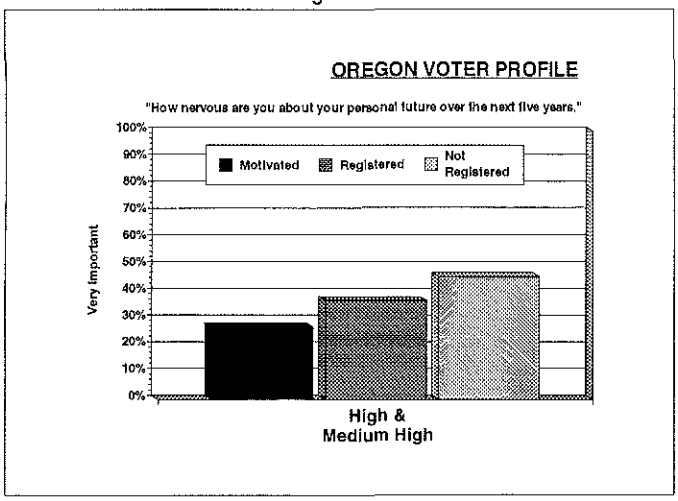
Figure 75



Nervous About the Future

It is not at all surprising then, given all of the above, to discover that non-voters acknowledge considerably more nervousness about their own personal future over the next five years.

Figure 76



FH

Growth and Livable Communities

A Slide Presentation

June 1993

Growth and Livable Communities

1

What I Value About Living in Oregon

2

Oregon's natural beauty and vital communities are intrinsic to our quality of life. They have also become key to our economic prosperity as well. In a random survey recently conducted by the Oregon Business Council, Oregonians across the state were asked this open-ended question: "What do you personally value about living in Oregon?"

What I Value About Living in Oregon

Natural Beauty and Recreation	36%
Sense of Community/The People	21%
Environmental Quality	14%
Other	29%

3

More than half of those surveyed cited Oregon's beauty and its people.

Scenic Photos

1. Cape Kiwanda
2. North Umpqua River
3. John Day Fossil Beds
4. Lane County Coast

4-7

And it's no wonder. Oregon is blessed with a magnificent and varied environment.

Community Photos

1. La Grande
2. McMinnville
3. Portland

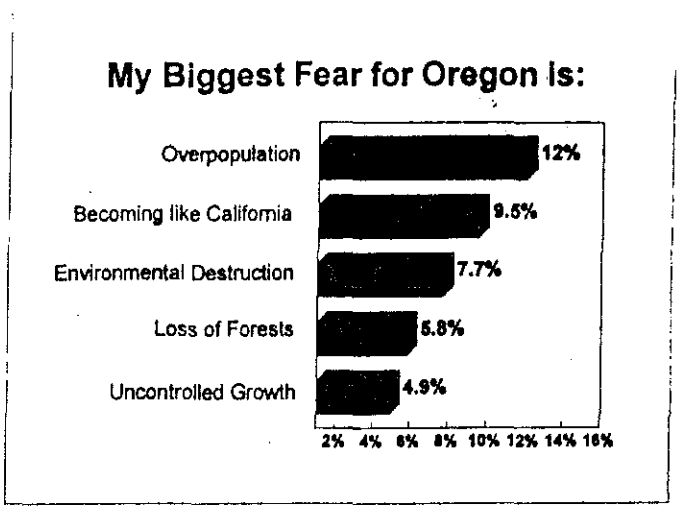
8-10

Likewise, Oregon's communities are vital places to live. These scenes are from La Grande . . . McMinnville . . . and Portland.

My Biggest Fear for Oregon

11

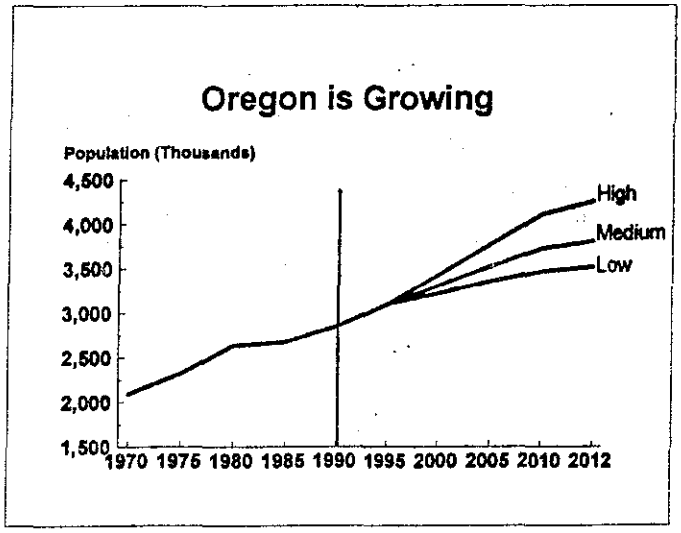
In the same Business Council survey, Oregonians were also asked to name their biggest fear for Oregon.



12

The top five responses all relate to population growth: overpopulation, becoming like California, environmental destruction, loss of forests, and uncontrolled growth.

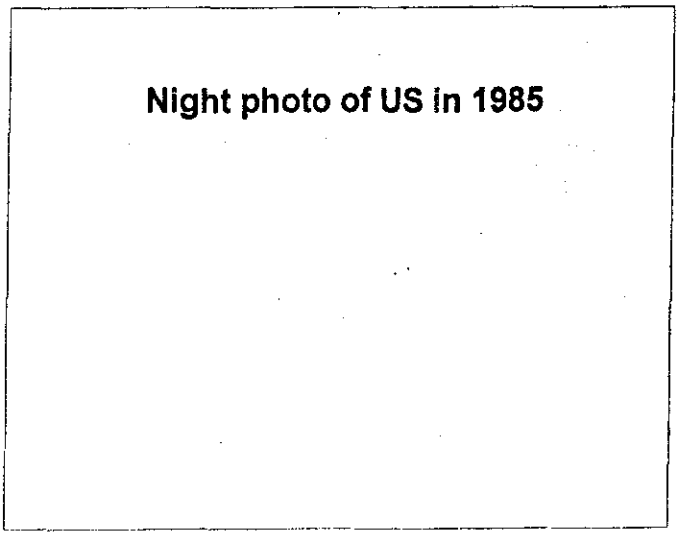
At the same time, more than 95 percent of those surveyed believe that "Oregon's population will grow considerably."



13

Oregon is growing now, and the forecast is for growth to continue.

ODOT, in its middle-range forecast, expects nearly a million more people in Oregon by 2010. We know forecasts are inherently uncertain, but note that in the two years since the 1990 census, Oregon grew by 137,000 people. The inevitability of growth that Oregonians feel can be better appreciated by taking a look at where growth has been occurring in the whole United States.



14

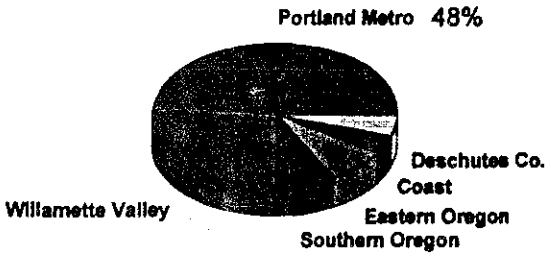
This photo was taken by satellite in 1985. Now take a look at the map 5 years later in 1991.

Night photo of U.S. in 1991

15

As you can see, there is a visible population movement westward.

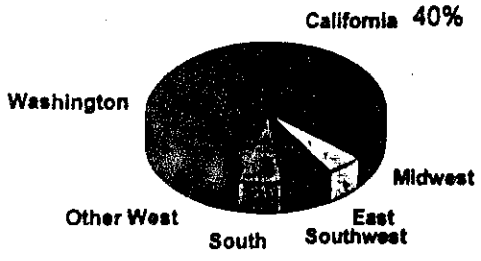
Where Growth is Occuring 1990-1992



16

For the most part, growth is occurring in Oregon's most populated areas which is where future growth is expected to occur also. Roughly half is in the Portland metropolitan area.

Sources of Immigration



17

More than two-thirds of Oregon's newcomers are from the West coast; about 40 percent are from California.

Benchmarks at Risk

18

Nearly all the respondents to the Oregon Business Council survey felt that population growth causes problems. In fact, if we continue on the course we're on, it may be difficult, if not impossible, to meet some of our benchmarks.

Benchmarks at Risk

- Mobility
- Air Quality
- Infrastructure
- Water Supply
- Water Quality
- Affordable Housing
- Open Spaces
- Parks
- Sense of Community

19

The Oregon Benchmarks are the state's guide to achieving an attractive future for Oregon -- as a people, as a place, and as an economy. They focus on what we want to achieve. A number of the quality of life benchmarks are at risk from unmanaged growth. They include:

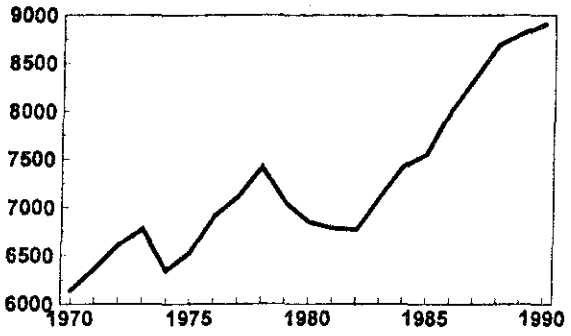
Sprawl Photos

20-22

The core problem is how we're growing--in a spread out, sprawling fashion--much the way other fast-growing areas have grown.

Sprawl brings with it a host of problems. It uses up a great deal of land, imposes greater costs on infrastructure, and diminishes people's sense of community.

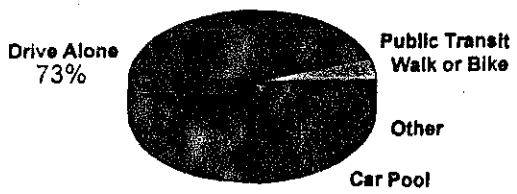
Vehicle Miles Traveled Per Capita



23

Not the least of the consequences of sprawl is that it makes car travel a necessity. Since 1970, there's been more than a 40 percent increase in auto travel per capita.

How do Oregonians get to work?



24

One of the factors of the increasing travel is the commute to work. Nearly three-quarters of Oregon's commuters drive to work alone.

Traffic Photos

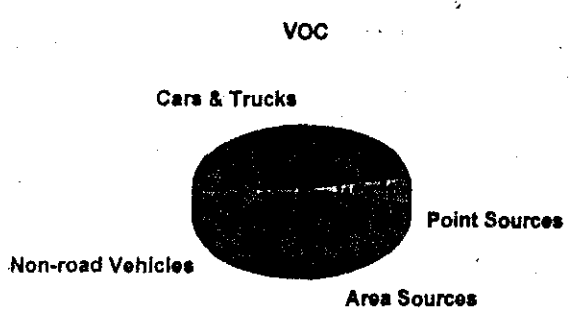
1. Salem
2. Albany
3. Eugene
4. Portland
5. Los Angeles

25-29

It's no wonder that traffic congestion is becoming more commonplace. These traffic sites are in Salem . . . Albany . . . Eugene . . . Portland . . . and Los Angeles.

More than 90 percent of those surveyed by the Oregon Business Council believe that travel congestion will make it difficult to travel in their local area in the future.

Ozone-Causing Emissions in the Portland Area: 1990



30

The increasing growth in travel also contributes to air pollution. In Portland, auto exhaust causes about half of the pollutants that contribute to smog. This graph shows volatile organic compound emissions; the breakdown is similar for nitrous oxides, the other component of smog.

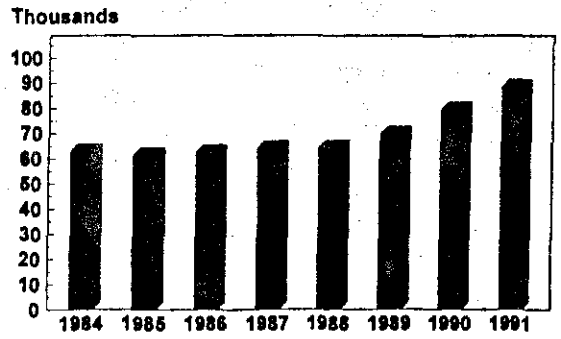
Smog Photos

1. Mt. Hood clear photo
2. Mt. Hood hazy photo

31,32

These photos show the visual consequences of smog--Mt. Hood on a clear day and Mt. Hood on a smoggy day.

Median Housing Prices



33

With growth comes increased demand for housing and higher housing prices.

Overall, median housing prices stayed flat during the mid-1980s when there was little growth. Between 1988 and 1991, when Oregon started growing again, the median price for existing homes increased nearly 40 percent. Prices for new homes increased even more, particularly in the pockets of rapid growth.

Oregon Livability Agenda

34

In recognition of the impact growth could have on Oregon's quality of life and the interrelatedness of growth issues, Gov. Roberts formed the Urban Livability Team. She charged it with developing an integrated approach to deal with these issues. The theme of our agenda is that it is not how much we grow but how we grow. We can grow and retain our quality of life by choosing another pattern of development.

Strategies

- Concentrate growth within urban growth boundaries

35

The urban growth boundaries are the basis of Oregon's land-use planning. We're now recognizing that by themselves they are not enough to fend off sprawl.

Strategies

- Concentrate growth within urban growth boundaries
- Create a pattern of urban development that is compact, fosters a sense of community, and offers a range of mobility choices

36

The Oregon Transportation Plan, the Portland clean air strategy, LCDC's transportation planning rule all include a compact pattern of development as a strategy to meet their goals. Our recommended new development design includes a mix of housing surrounding a central core of stores, restaurants, civic services, and the like. The intent is to provide places for people to live that are inviting, that reduce the need for driving, and that contain generous amounts of open spaces.

Visual Preference Survey Photos

37-39

The design we recommend for new communities is not radical or unappealing. In their Visual Preference Survey, Portlanders rated these kinds of pedestrian-friendly neighborhoods very high.

Community Photos

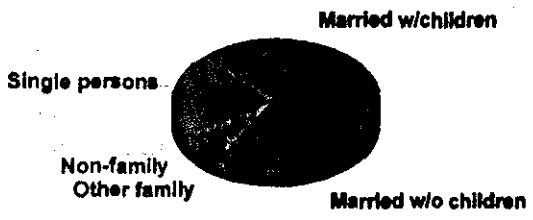
1. Eugene
2. Salem
3. Albany

40-42

There are also communities and neighborhoods throughout the state that include both traditional neighborhoods and those with a mix of houses and shops. These are from Eugene . . . Salem . . . Albany.

Percentage of Households by Type

1970

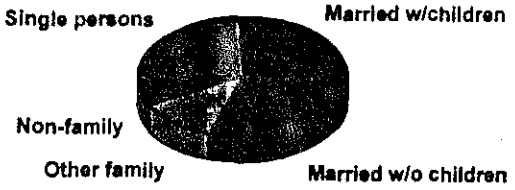


43

The changing mix of Oregon's households may also signal a preference for a different kind of development. In 1970, for example, married couples with children made up 37 percent of all households.

Percentage of Households by Type

1990



44

By 1990, the percentage had dropped to 26 percent. Correspondingly, singles grew from 19% to 25% during the two decades.

With smaller households, fewer households with a single wage earner, more mothers working outside the home, and increasing numbers of elderly, more people may prefer a greater variety of housing closer to jobs and other daily activities.

City Open Spaces Photos

1. Salem
2. Eugene
3. Portland

45-47

Generous amounts of green spaces are also an integral part of the new design.

While Oregon towns and cities contains generous spots of green spaces, some could be vulnerable to future development. Metro, for example, estimated 90% of the open space in the Portland area is privately owned and can be developed.

Strategies

- Concentrate growth within urban growth boundaries
- Create a pattern of urban development that is compact, fosters a sense of community, and offers a range of mobility choices
- Preserve and expand open spaces, park lands, and natural areas

48

In the Business Council survey, when asked "Overall, how good a job do you think Oregon is doing with providing parks and open space," 86 percent said good or very good. That was the highest rating given to any government service.

However, park use has doubled over the past 20 years. During the same time, no new parks have been built. In just the past six years, use at the 5 most popular state parks has increased 45 percent.

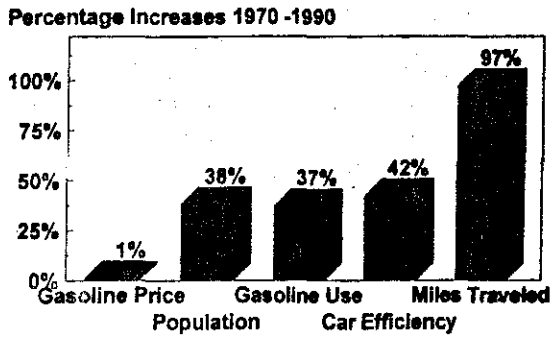
Strategies

- Concentrate growth within urban growth boundaries
- Create a pattern of urban development that is compact, fosters a sense of community, and offers a range of mobility choices
- Preserve and expand open spaces, park lands, and natural areas
- Expand the travel options available to meet Oregonians' mobility needs.

49

The next strategy is to provide more choice in travel than just the car.

Auto Travel



50

This slide summarizes the story of auto travel. First, note that the number of miles traveled increased at nearly triple the rate of population.

Second, we saw a significant boost in car efficiency over the two decades. Miles per gallon, on average, went from 12.6 mpg in 1970 to 17.9 in 1990. Unfortunately, we made virtually no headway in reducing gasoline use. The gains we made in efficiency were overshadowed by more driving.

Third, there was virtually no increase in the real price of gasoline.

Photo of Pedestrian-Friendly Layout

51

One of the most important actions in making a community bike- and pedestrian-friendly is a layout that allows bicyclists and walkers to get to where they want to go in direct, safe routes.

In Portland's visual preference survey, this kind of layout also received high ratings.

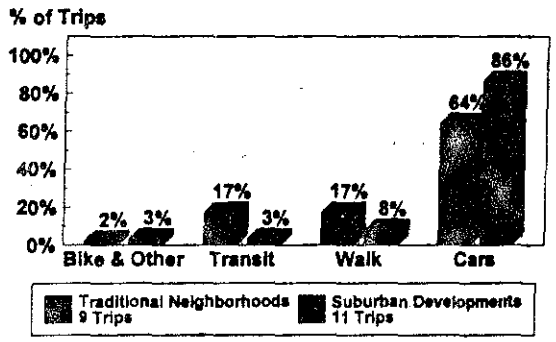
Transportation Photos

1. Buses
2. MAX
3. Bikes
4. Walking

52-57

The goal is not to displace the car, but rather to make other modes realistic options ... whether it be buses, light rail, bikes, or walking...

Daily Travel by Mode
San Francisco Bay Area



58

A study in the San Francisco Bay Area compared travel in two different development styles. It found that people living in traditional neighborhoods walked and biked more and used the car less than those living in suburban neighborhoods. Those in traditional neighborhoods also made two fewer trips per day.

Strategies

- Concentrate growth within urban growth boundaries
- Create a pattern of urban development that is compact, fosters a sense of community, and offers a range of mobility choices
- Preserve and expand open spaces, park lands, and natural areas
- Expand the travel options available to meet Oregonians' mobility needs.
- Make housing more affordable

59

Creating neighborhoods with a variety of housing mixed with stores and shops is now often precluded by zoning laws.

Strategies

- Implement pricing strategies that reflect environmental and social costs

60

The idea underlying this strategy is that those who impose costs on society or the environment should pay those costs. We believe that may be the most effective and efficient way to reduce pollution, cut congestion, discourage wasteful water use, and promote efficient land use.

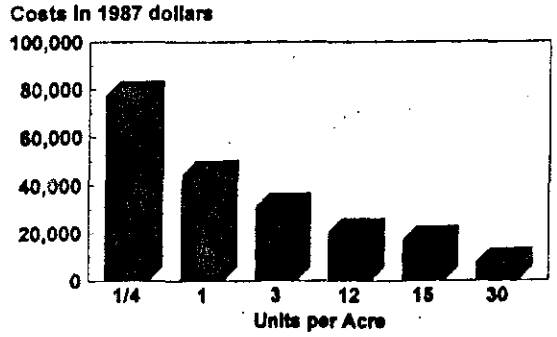
Strategies

- Implement pricing strategies that reflect environmental and social costs
- Reform the funding of public works

61

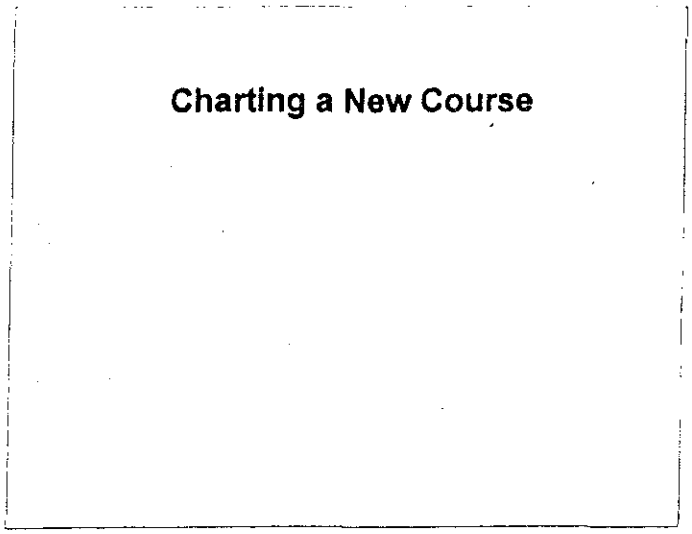
This is a complicated issue. It deals with funding mechanisms, user fees, and how to apportion costs. The point here is that a sprawling style of growth is the most expensive for providing infrastructure.

Infrastructure Cost per Unit



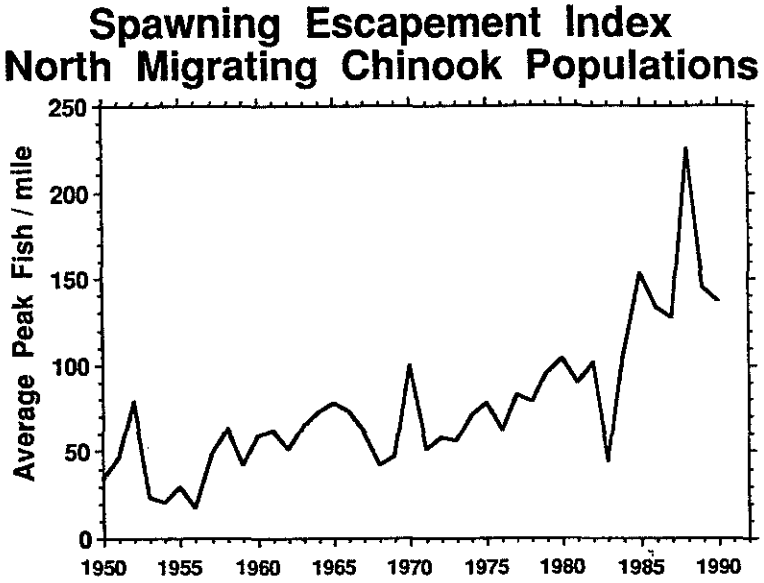
62

Becoming more efficient can reduce infrastructure costs. For example, implementation of the state transportation rule Oregon would save $11 billion in road expansions over the next 20 years. It would also reduce gasoline use 15 percent.



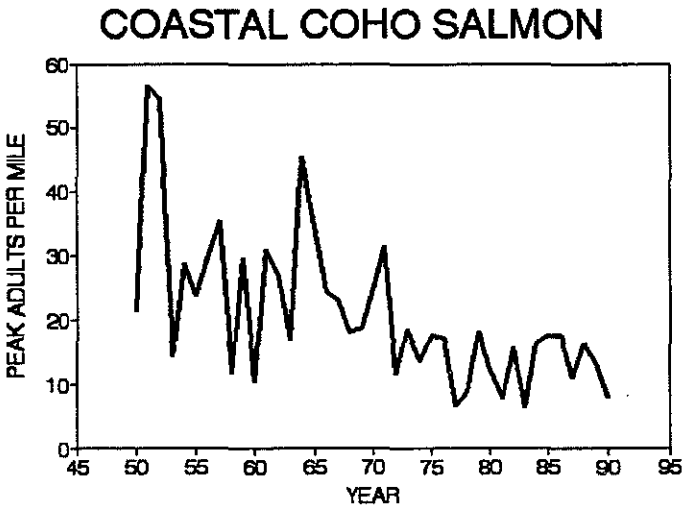
63-64

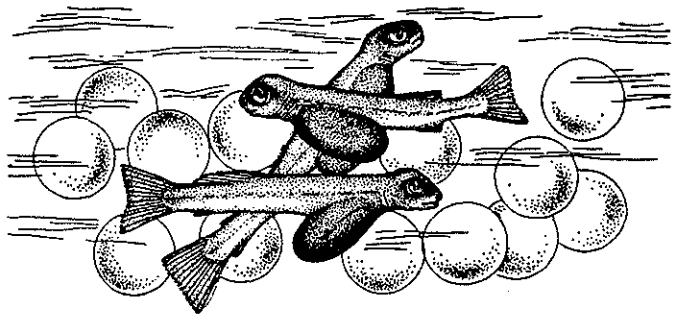
Charting a new course . . .



STATUS OF ANADROMOUS SALMONIDS

IN OREGON COASTAL BASINS





OREGON DEPARTMENT OF FISH AND WILDLIFE

STATUS OF ANADROMOUS SALMONIDS IN OREGON COASTAL BASINS

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December 1992

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INTRODUCTION

Five species of anadromous salmonids inhabit Oregon coastal basins: coho, chinook (spring and fall), and chum salmon, steelhead (summer and winter), and cutthroat trout (Table 1, Figure 1). These fishes, and the fisheries they support, represent a priceless aspect of Oregon's aesthetic and cultural heritage, and are an important basis for diverse service and product based business throughout the state. The purpose of this document is to provide a discussion of the characteristics and status of each species as best we know it, and a discussion of factors that may influence their abundance.

Table 1. Occurrence of anadromous salmonids in major Oregon coastal basins. An "H" indicates a population comprised of hatchery fish only.

Basin	Coho	Spring Chinook	Fall Chinook	Chum	Summer Steelhead	Winter Steelhead	Searun Cutthroat
Necanicum R.	X		H	X		X	X
Elk Cr.	X					X	X
Nehalem R.	X	X	X	X		X	X
Tillamook Bay							
Miami R.	X		X	X		X	X
Kilchis R.	X	X	X	X	H	X	X
Wilson R.	X	X	X	X	H	X	X
Trask R.	X	X	X	X		X	X
Tillamook R.	X		X	X		X	X
Nestucca R.	X	X	X	X	H	X	X
Neskowin Cr.	X		X	X		X	X
Salmon R.	X		X	X		X	X
Siletz R.	X	X	X	X	X	X	X
Yaquina R.	X		X	X		X	X
Beaver Cr.	X		X			X	X
Alsea R.	X	X	X	X		X	X
Yachats R.	X		X	X		X	X
Siuslaw R.	X	X	X			X	X
Siltcoos R.	X					X	X
Tahkenitch Cr.	X					X	X
Umpqua R.	X	X	X	X	X	X	X
Smith R.	X			X		X	X
Tenmile Cr.	X					X	X
Coos R.	X		X	X		X	X
Coquille R.	X	X	X	X		X	X
New River	X		X			X	X
Sixes R.	X		X			X	X
Elk R.	X		X			X	X
Euchre Cr.	X		X			X	X
Rogue R.	X	X	X		X	X	X
Hunter Cr.	X		X			X	X
Pistol R.	X		X			X	X
Chetco R.	X		X			X	X
Winchuck R.	X		X			X	X

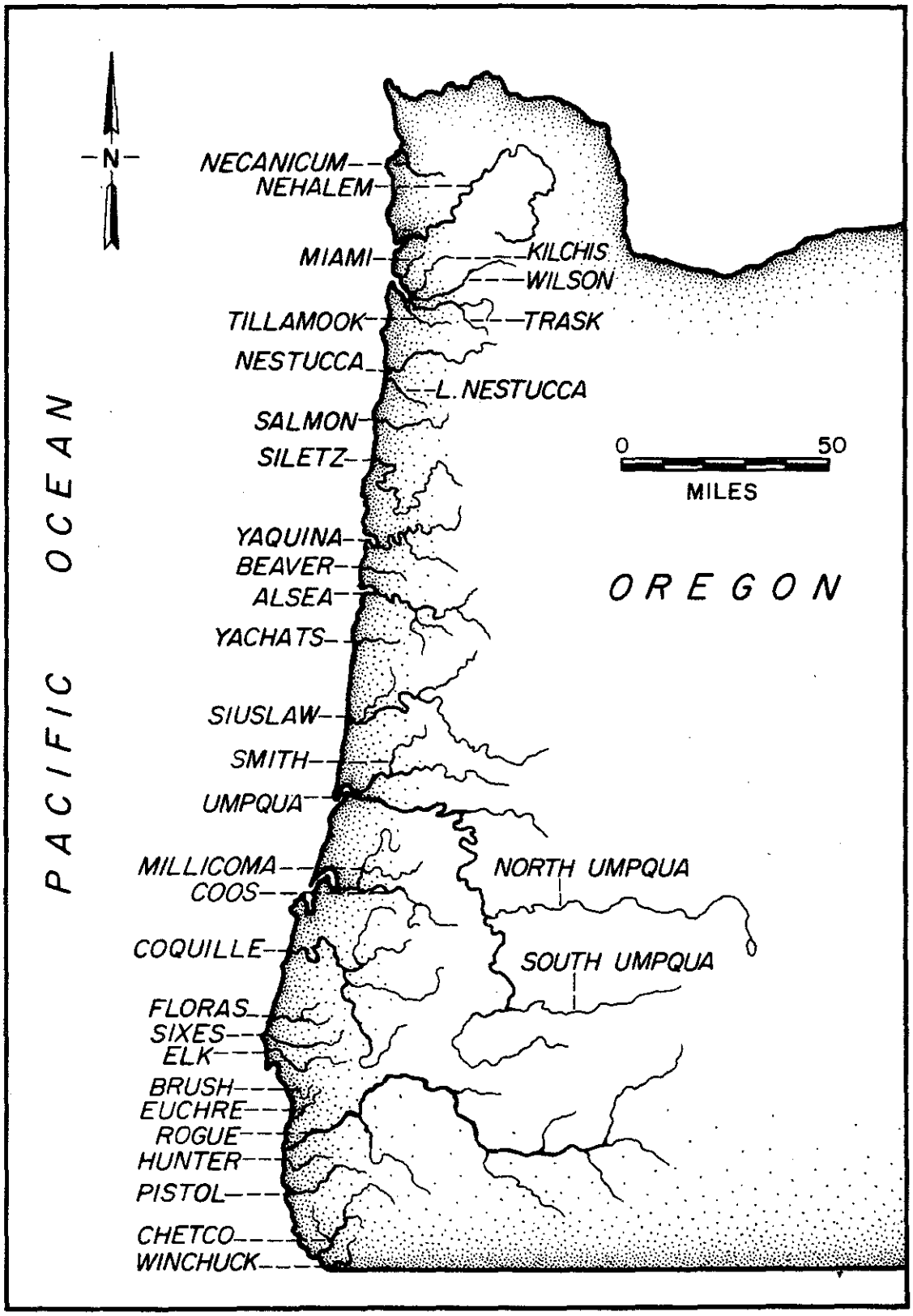


Figure 1. Map of the Oregon coast showing major river basins inhabited by anadromous salmonids.

COHO SALMON
Oncorhynchus kisutch

Coho salmon have been considered the most important commercially caught salmonid in Oregon. Until recently, they were usually the most common salmonid in most coastal streams. Compared to other anadromous salmonids in Oregon, coho salmon have a very simple life history, with populations primarily on a 3 year cycle.

Description

Adult coho salmon are distinguished from other Pacific salmon species by the presence of small black spots on the back and on the upper lobe of the tail (Scott and Crossman 1973). Adult coho salmon typically mature at 4-12 pounds. Juvenile coho salmon are identified by long, narrow, widely-spaced parr marks and the long leading edge of the anal fin.

Distribution

Oregon lies near the southern boundary of the range of coho salmon in North America, which extends from Point Hope, Alaska to Monterey Bay, California. Within Oregon, coho salmon are found in the Columbia River and coastal streams. The Oregon Department of Fish and Wildlife (ODFW) has provisionally identified 94 populations of wild coho salmon on the Oregon Coast. Wild coho salmon occur in most coastal basins. However, the most important producers occur from the Coquille River north and include the Nehalem River, Tillamook Bay tributaries, Nestucca River, Siletz River, Alsea River, Siuslaw River, Umpqua River, Coos River, and Coquille River (Figure 1). In addition, three lake basins on the central coast are important producers of coho salmon: Siltcoos Lake, Tahkenitich Lake, and Tenmile Lakes. Although coho salmon production in these lake basins has drastically declined since the introduction of warmwater fishes, spawning survey counts (Cooney and Jacobs 1991) indicate that these systems are still perhaps the most productive coho salmon habitat on the Oregon Coast.

Life History

Adult coho salmon migrate into fresh water in the fall to spawn. Spawning of wild coho salmon usually occurs from mid-November through February. Adult spawning coho salmon are typically 3 years old and they are often accompanied by 2-year-old jacks (precocious males) from the next brood. Spawning occurs primarily in small tributaries located throughout coastal basins. The parents normally exhibit strong homing to their natal stream. The female digs a nest (redd) in the gravel and lays her eggs which are immediately fertilized by accompanying adult males or jacks. The eggs are covered by digging and displacing gravel from the upstream edge of the nest. Each female lays about 2,500 eggs. The adults die soon after spawning.

The eggs hatch in about 35-50 days, depending upon water temperature (warm temperature speeds hatching). The alevins remain in the gravel 2 or 3

weeks until the yolk is absorbed and emerge as fry to actively feed in the spring. Juvenile coho salmon spend 1 summer and 1 winter in fresh water. The following spring, approximately 1 year after emergence, they undergo physiological changes that allow them to survive in sea water. They then migrate to the ocean as silvery smolts about 4-5 inches in length.

The smolts undergo rapid growth in the ocean, reaching about 15-20 inches by fall. Little is known of the ocean migrations of coho salmon from Oregon coastal streams, however based on what is known, it appears migrations are mostly limited to coastal waters (Figure 2). Initial ocean migration appears to be to the north of their natal stream (Fisher and Pearcy 1985; Hartt and Dell 1986). After the first summer in the ocean, a small proportion of the males attain sexual maturity and return to spawn as jacks. Migration patterns during the fall and winter are unknown. Those fish remaining at sea grow little during winter but feed voraciously during the next spring and summer, growing to about 23-33 inches in length. During this second summer in the ocean, a substantial percentage of these maturing adults are caught in ocean troll and sport fisheries, usually to the south of their natal stream. The

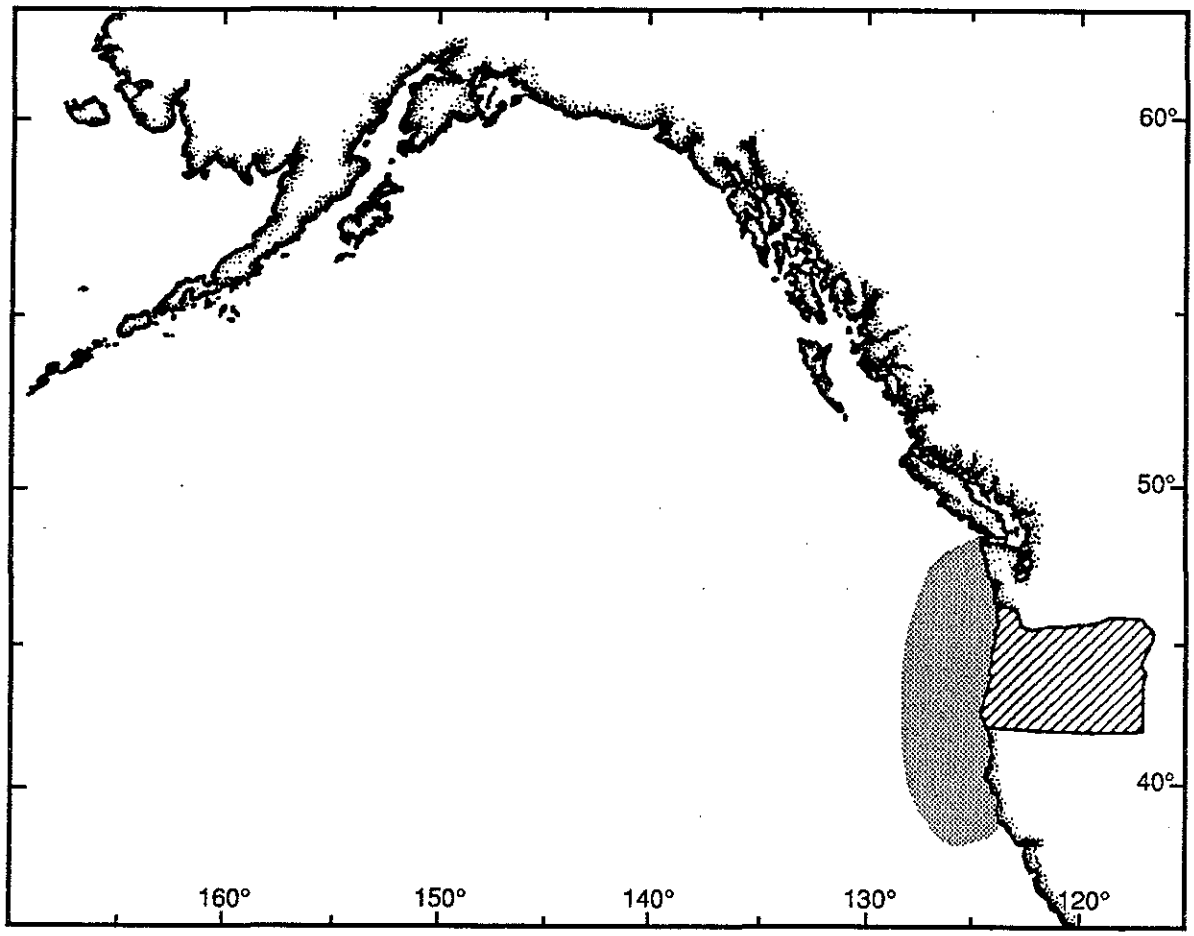


Figure 2. Presumed predominant range in oceanic waters of coho salmon from Oregon coastal streams.

survivors return to their home streams or neighboring streams where they spawn and die to complete the life cycle.

Habitat Requirements

Spawning and rearing of juvenile coho salmon generally take place in small low gradient (generally <3%) tributary streams, although rearing may also take place in lakes where available. Coho salmon require clean pea to orange size gravel for spawning and cool water temperatures (53-58°F preferred, 68°F maximum) for rearing (Reiser and Bjornn 1979; Reeves et al. 1989). Fry emerge from February to early June (Moring and Lantz 1975) and occupy backwater pools and the stream margins (Mundie 1969; Lister and Genoe 1970; Nickelson et al. 1992a). During summer, coho prefer pools in small streams, whereas during winter, they prefer off-channel alcoves, beaver ponds, and dam pools with complex cover (Nickelson et al. 1992a, 1992b). Complexity, primarily in the form of large and small wood is an important element of productive coho salmon streams (Nickelson et al. 1992b; Rodgers et al. In Press). Little is known about residence time or habitat use of estuaries during seaward migration, although it is usually assumed that coho salmon spend only a short time in the estuary before entering the ocean.

Hatchery Production

Coho salmon are propagated at 9 public hatcheries in Oregon coastal basins. Coho salmon production in all these hatcheries is funded 100% by State dollars except Cole M. Rivers Hatchery in the Rogue Basin which is funded by the U.S. Army Corps of Engineers as mitigation for Rogue Basin dams. Releases of smolts from these facilities averaged about 5.2 million fish during the years 1987-91 compared with an average of 29.7 million coho salmon smolts released from 13 Columbia River hatcheries. Smolts produced from coastal hatcheries and local STEP projects are released in the Nehalem, Trask, Nestucca, Salmon, Siletz, Alsea, Siuslaw, Umpqua, Tenmile lakes, Coos, Coquille, and Rogue basins. STEP projects also release varying numbers of hatch-box fry annually in a variety of locations.

Fisheries

Harvest Management Framework

Oregon coastal wild and hatchery coho salmon populations are part of a larger mix of coho populations and contribute to sport and commercial fisheries in the ocean off Oregon and the neighboring region. The Pacific Fishery Management Council (PFMC), the National Marine Fisheries Service (NMFS) and the states of Washington, Oregon and California jointly regulate ocean fisheries within the Exclusive Economic Zone (EEZ) from 3-200 nautical miles offshore (Figure 3). Inside 3 miles and in estuaries and rivers, each state manages their salmon resources within the Council's Salmon Management Plan (FMP) objectives. The PFMC is one of seven regional councils created by the Magnuson Fishery Conservation and Management Act (MFCMA) in 1976. The primary role of PFMC is developing, monitoring, and revising management plans

Figure 3. Major ports of landing and general management regions for the Pacific Fisheries Management Council area.

for fisheries conducted within the EEZ of the U.S. Coast. The PFMC annually evaluates the status of West Coast coho and chinook salmon stocks, and sets ocean harvest regulations developed within the salmon FMP framework based on the MFCMA national standards and spawning escapement goals. In the PFMC's management area south of Cape Falcon (Figure 3), the aggregate of wild coastal coho salmon populations known as Oregon Coastal Natural (OCN) coho salmon forms the major stock of concern that "drives" coho salmon management for ocean salmon fisheries. Other depressed salmon stocks and species listed by the Endangered Species Act may also affect management decision-making by the Council.

The continual decline of OCN coho salmon has been the prime concern of PFMC and Oregon fishery managers since the early 1980s. The development of ODFW's Coho Salmon Plan (1982) and the PFMC's Salmon FMP (1984) have defined spawning escapement goals and have limited ocean harvests in order to return a larger share of adults to spawning grounds in coastal rivers. Regional OPI area ocean harvest rates have dropped from an estimated 70-90% prior the early 1980s to 25-60% since 1984. Despite these reductions, OCN coho salmon have continued to decline (Figure 4).

Contribution to Fisheries

Oregon coastal coho salmon primarily contribute to sport and commercial fisheries in the Oregon Production Index (OPI) area (the area extending from Leadbetter Point, Washington south through California). OCN and coastal hatchery coho salmon combined have comprised about 33% of OPI fisheries during the period 1985-91 (an average 264,000 out of an average 792,000). The distribution of catch between the sport and commercial fisheries has varied greatly from year to year.

Estimates of sport harvest of adult coho salmon in Oregon coastal estuaries and rivers based on salmon tags have ranged from 1,500 to 45,200 annually, averaging 16,000 since 1971.

Several years of data from coded-wire-tagged hatchery fish collected in port sampling programs along the west coast of the U.S. and Canada have formed a coastwide picture of the distribution and contribution to ocean fisheries by time and area for Oregon coastal hatchery coho salmon and, by inference, OCN coho salmon. This is the basis for setting regional management strategies.

For example, Oregon coastal coho salmon comprise a higher proportion of the catch in the "Klamath Management Zone" (KMZ) and south off California than in more northern management areas (Figure 5). However, because the total ocean catch of coho salmon in these two areas is small compared with the catch off the northern and central coast of Oregon, the largest number of coastal coho salmon are caught off central Oregon (Figure 6). Coho salmon released from private hatcheries during the 1980s were also caught primarily off the central coast of Oregon. A small coho salmon population originating from both natural and hatchery production in the Rogue Basin has a more southerly ocean migration than other coastal coho salmon and are caught almost entirely in the KMZ and in California south of the KMZ (Figure 6).

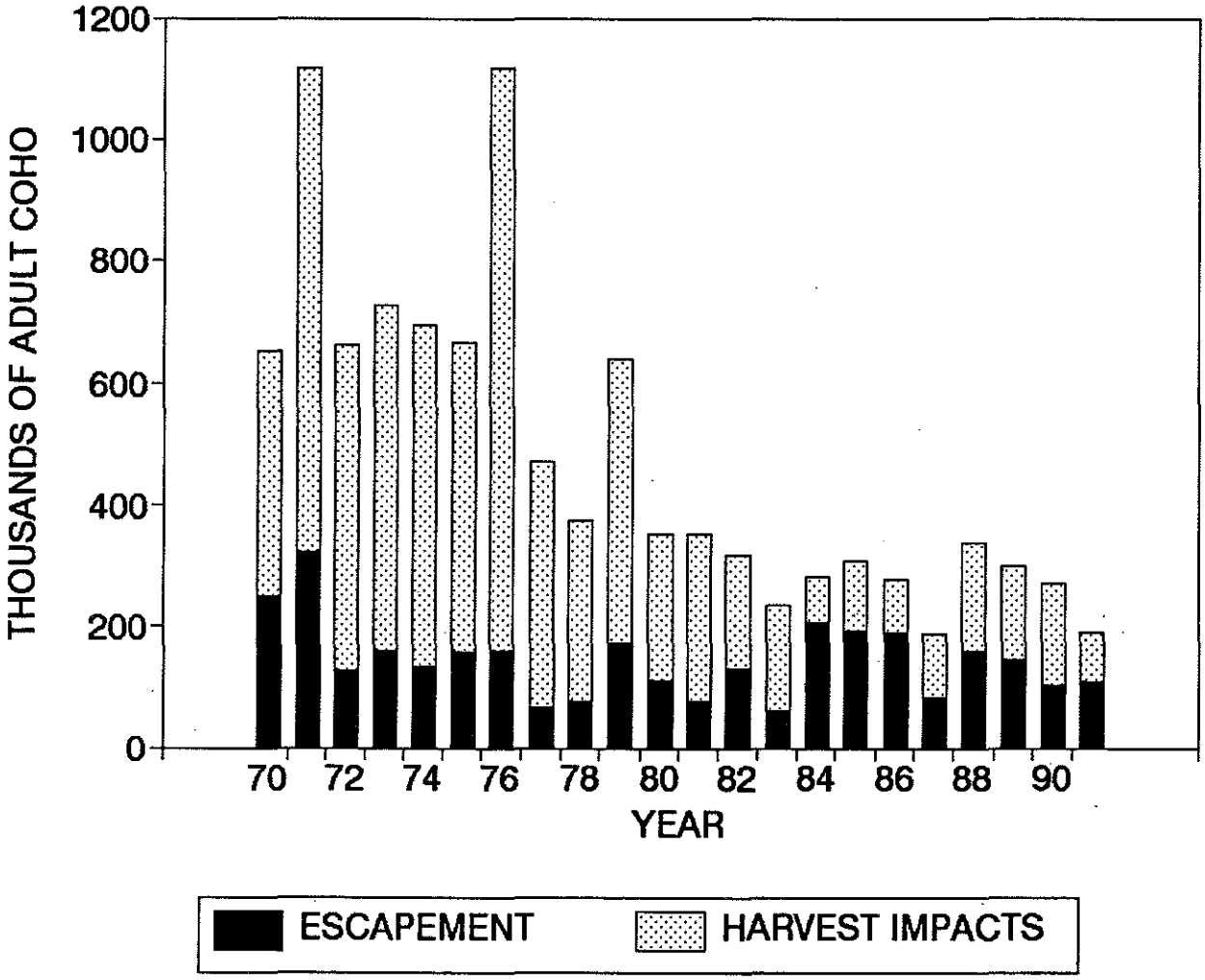


Figure 4. Oregon coastal natural (OCN) coho salmon stock size, harvest impacts (catch plus shaker mortality), and escapement, 1970-1991.

Effects of Ocean Environment on Annual Catch

The sport and commercial harvest of coho salmon off Oregon is subject to highly variable ocean conditions. These conditions can make the fish more or less available to harvest, depending on the situation. Factors such as localized water circulation, or upwelling conditions along the coast, cause large changes in sea surface temperatures and feeding conditions. These changes can either concentrate or disperse fish, creating significant variations in salmon catch rates and landings.

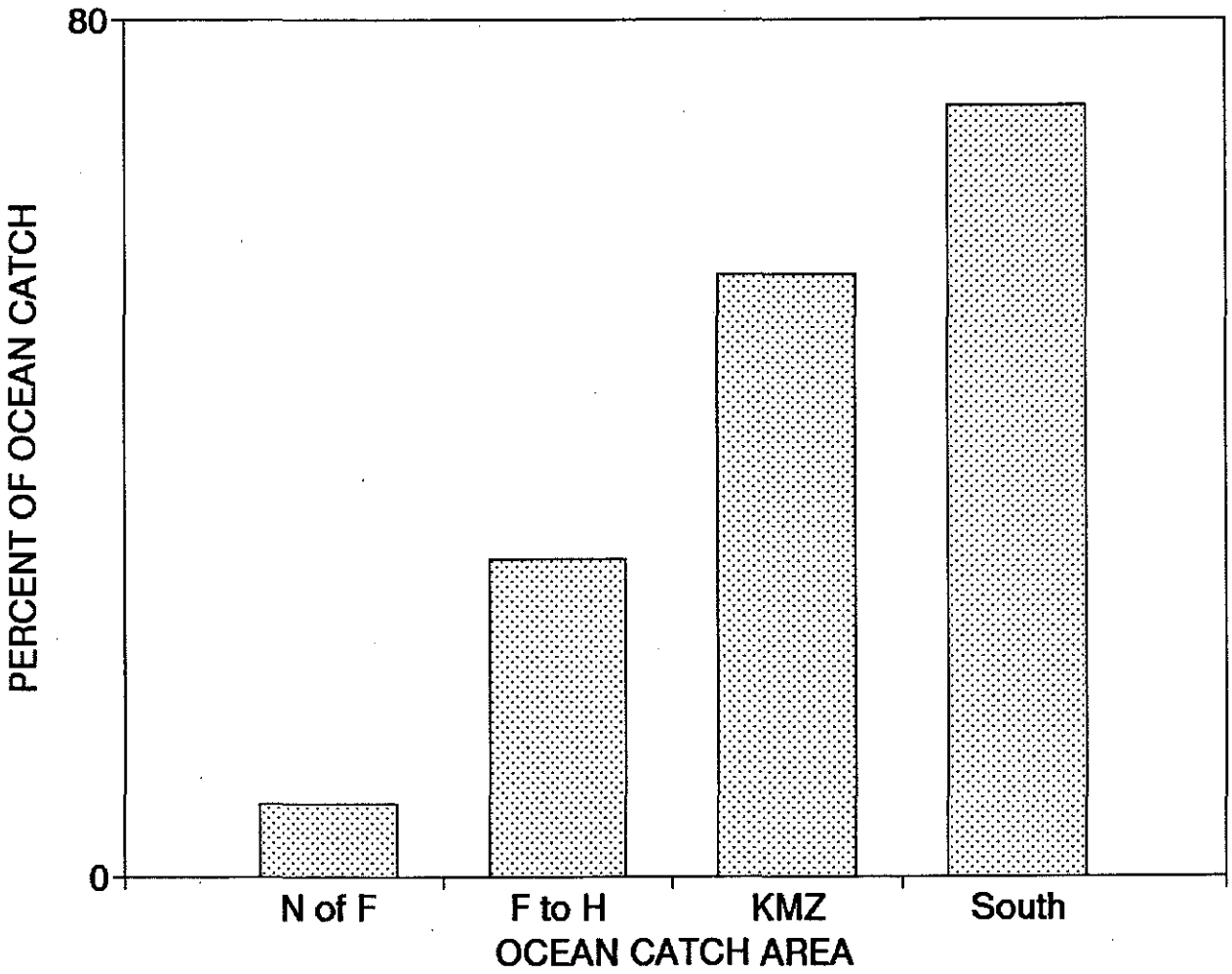


Figure 5. Presumed proportion of the catch in each ocean catch area comprised of Oregon coastal coho salmon. Data are from CWT recoveries in ocean fisheries from 1979-1981. Ocean catch areas: N of F = north of Cape Falcon, OR; F to H = Cape Falcon south to Humbug Mt., OR; KMZ = Klamath management zone (Humbug Mt. to Horse Mt., CA); South = south of Horse Mt.

Status of Populations

Abundance of wild coho salmon spawners in Oregon coastal streams declined during the period from about 1965 to about 1975 and has fluctuated at a low level since that time (Figure 7). Established annual escapement goals have not been achieved since 1986 (PFMC 1992).

Forty-six of the 94 populations (49%) of wild coho salmon identified by ODFW on the Oregon coast are in small direct ocean tributaries. If the populations of these small streams are grouped by geographic area, 55 coastal populations will result. Information on population abundance is available from spawning surveys (Cooney and Jacobs 1990, 1992; Jacobs 1989; ODFW unpublished data) and from anecdotal observations of juveniles or adults (ODFW

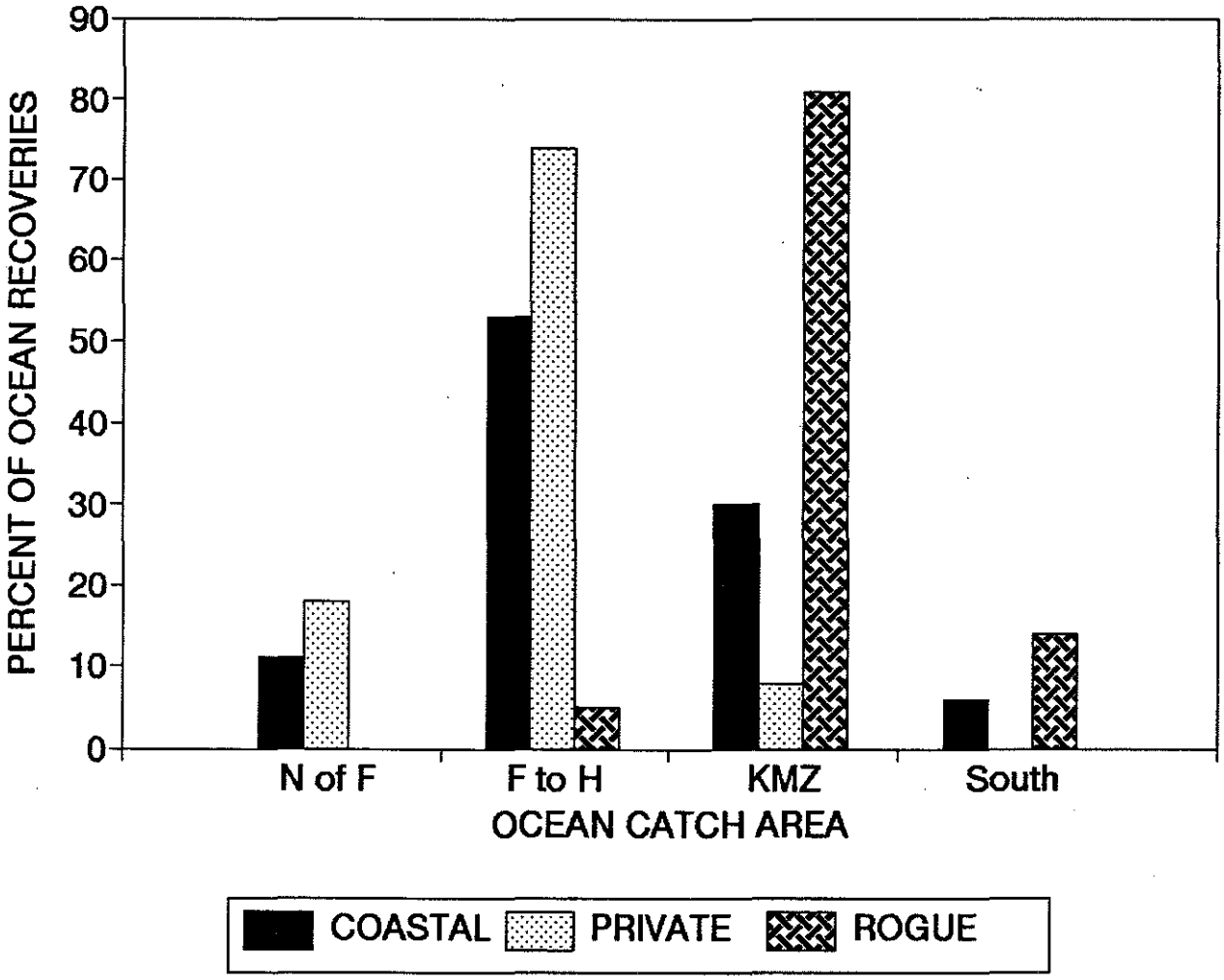


Figure 6. Ocean catch distribution for three groups of coastal hatchery coho salmon. Coastal = public hatcheries south of the Columbia River and north of the Rogue River; Rogue = Cole M. Rivers Hatchery; Private = private hatcheries. Catch areas are the same as for Figure 5.

unpublished data). The status of each population has been assessed relative to abundance during the last 20 years based upon the criteria presented in **APPENDIX A.**

As a result of this exercise, 6 populations were classified as healthy, 2 populations were classified as special concern, 41 populations were classified as depressed, and 6 populations were classified as unknown (Table 2).

Ten populations have been identified (Chilcote et al. 1992) that are considered in compliance with standards of abundance and hatchery influence of the ODFW Wild Fish Management Policy [OAR 635-07-525-529]. Populations of coho salmon in southern Coos and Curry counties are included on the Oregon Sensitive Species List. However, little information is available for these populations and they were probably never very large.

Table 2. Provisional status of wild coho salmon populations in Oregon coastal basins.

Population	Status[a]	Comments
Necanicum R.	Depressed	
Elk Cr.	Depressed	
Nehalem R.		
Lower Nehalem R.	Depressed	
North Fork Nehalem R.	Special concern	Hatchery strays
Salmonberry R.	Unknown	
Upper Nehalem R.	Depressed	
Tribs. North of Tillamook Bay	Unknown	
Tillamook Bay		
Small Tillamook Bay Tribs.	Unknown	
Miami R.	Depressed	
Kilchis R.	Depressed	
Wilson R.	Depressed	
Trask R.	Depressed	Hatchery strays
Tillamook R.	Depressed	
Nestucca R.	Depressed	
Little Nestucca R.	Depressed	
Tribs. South of Tillamook Bay	Depressed	
Salmon R.	Depressed	
Siletz R.	Depressed	Hatchery strays
Schooner Cr.	Unknown	
Drift Cr. (Siletz)	Unknown	
Yaquina R.	Depressed	
Beaver Cr.	Depressed	
Tribs. North of Alsea R.	Depressed	
Alsea R.	Healthy	
Drift Cr. (Alsea)	Healthy	
Tribs. South of Alsea R.	Depressed	
Yachats R.	Depressed	
Siuslaw R.	Depressed	
North Fork Siuslaw R.	Depressed	
Siltcoos R.	Healthy	
Tahkenitch Cr.	Healthy	
Umpqua R.		
Smith R.	Depressed	
Lower Umpqua R.	Depressed	
North Fork Umpqua R.	Special concern	Hatchery strays
South Fork Umpqua R.	Depressed	
Tenmile Cr.	Depressed	
Coos R.	Healthy	
Millicoma R.	Depressed	
Coquille R.	Healthy	
South Fork Coquille R.	Depressed	
New River Tribs.	Depressed	
Sixes R.	Depressed	
Small Ocean Tribs.	Unknown	

Table 2. Continued.

Population	Status[a]	Comments
Elk R.	Depressed	
Euchre Cr.	Depressed	
Rogue R.		
Lower Rogue R.	Depressed	
Middle Rogue R .	Depressed	
Upper Rogue R.	Depressed	
Illinois R.	Depressed	
Applegate R.	Depressed	
Hunter Cr.	Depressed	
Pistol R.	Depressed	
Chetco R.	Depressed	
Winchuck R.	Depressed	
Small Ocean Tribs.	Depressed	

[a] *Status is based on criteria in* **APPENDIX A.**

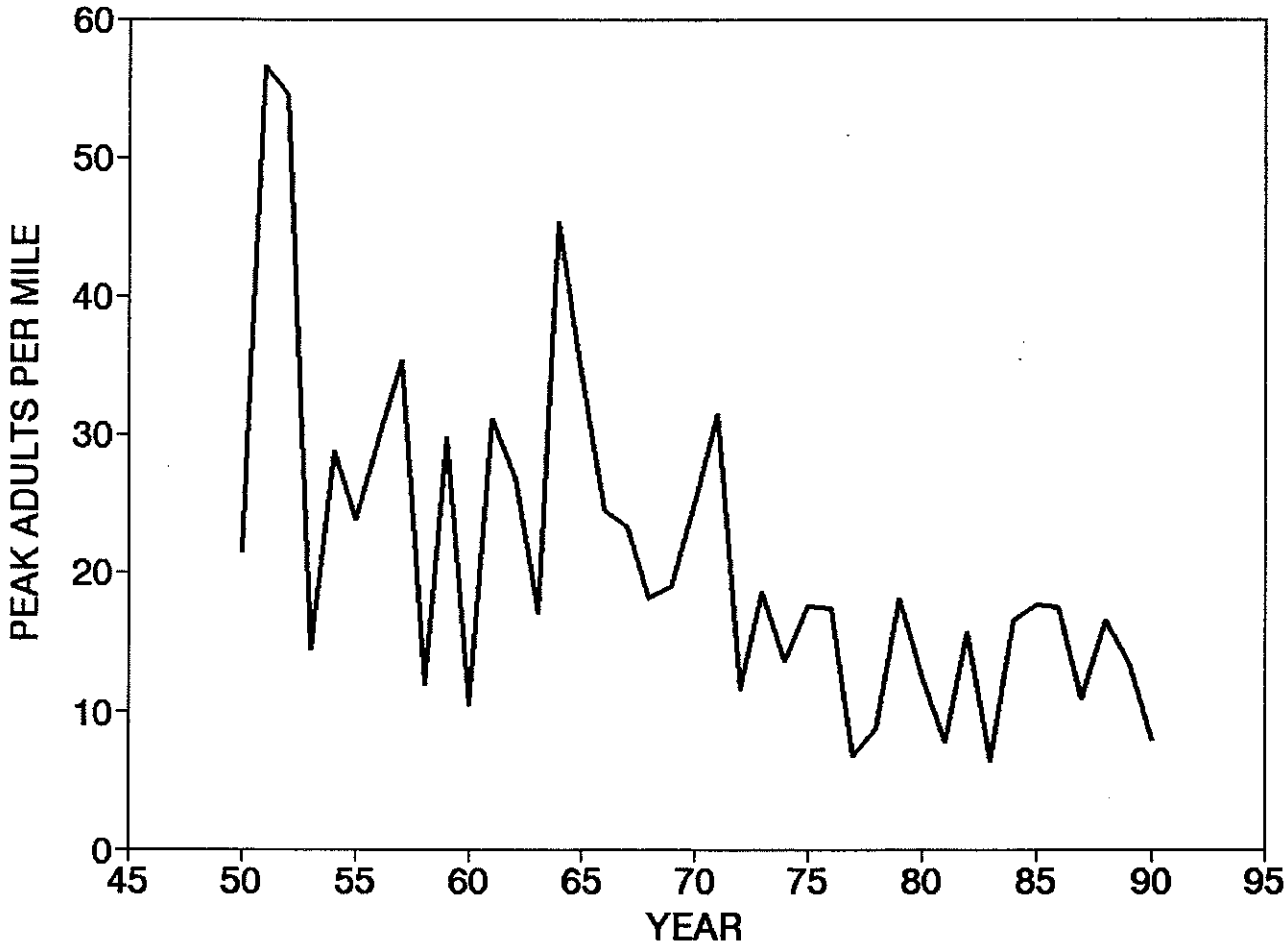


Figure 7. Trend in average peak count of wild coho salmon spawners in Oregon coastal streams.

CHINOOK SALMON
Oncorhynchus tshawytscha

Chinook salmon are supported by all but the smallest Oregon coastal river basins. As a species, Oregon's chinook salmon include many distinct populations. These populations exhibit a striking range of life history diversity, including variation in the date, size, and age at which juveniles enter the ocean, oceanic migration pattern, season of return to fresh water, length of upriver migration, date of spawning, average age at maturity, and age-specific size.

Description

Adult chinook salmon tend to achieve larger size than coho or chum salmon. In Oregon, runs of chinook salmon returning to coastal rivers may include individual fish that weigh from less than 2 to over 70 pounds; depending on the population and the year, runs of chinook salmon may include a preponderance of 10-25 pound fish or 25-50 pound fish. Adults are distinguished from other salmonids by the presence of small black spots on both lobes of the tail fin and a lower gum-line that is black in both the immature ocean phase as well as the spawning phase. Juvenile chinook salmon generally have parr marks wider than the interspaces and lack the long leading edge of the anal fin and bright coloration often characteristic of juvenile coho salmon (Scott and Crossman 1973).

Distribution

Populations of chinook salmon in North America occur primarily from central California through Kotzebue Sound, Alaska (McPhail and Lindsay 1970; Major et al. 1978). Populations of chinook salmon in Oregon are supported by many river basins tributary to the Pacific Ocean and the Columbia River. Although most of the very small ocean tributary streams in Oregon apparently support wild populations of coho salmon, they generally do not support populations of chinook salmon. The ODFW wild fish population list provisionally identifies 55 populations of chinook salmon in Oregon coastal watersheds, from the Nehalem River on the north coast near the mouth of the Columbia River to the Winchuck River on the south coast near the California border (Figure 1). A population comprised of only hatchery fish exists in the Necanicum River on the north coast.

Life History

Figure 8 shows the general life history stages of coastal chinook salmon; however, considerable variation in the spatial and temporal patterns of rearing and migration occurs within and among populations. The vast majority of chinook salmon enter Oregon coastal rivers from about April through December, although a few fish are probably entering some rivers during every month of the year. Anglers and biologists loosely distinguish populations of chinook salmon by the season of the year during which they return to their home stream. Thus, spring fish enter the rivers during the spring, summer fish enter the rivers during the summer, fall fish enter the

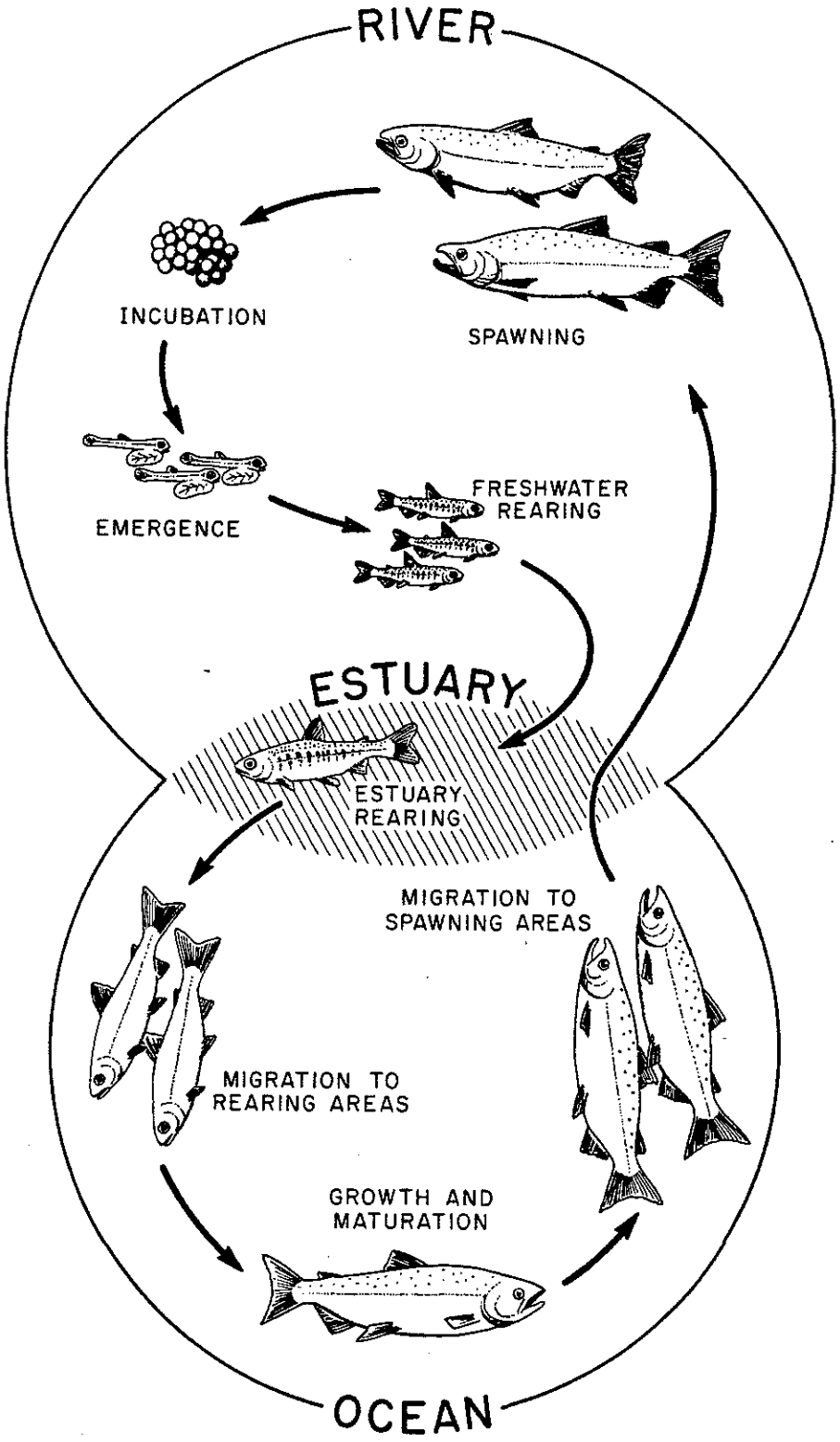


Figure 8. Life cycle of Oregon chinook salmon.

rivers during the fall, and winter fish enter the rivers during the winter. Populations of chinook salmon in Oregon coastal rivers are usually referred to broadly as either spring or fall fish, although several populations could legitimately be described as summers or winters. Spawning generally occurs during the period of September to early-March, depending on the population.

Populations of chinook salmon exhibit a broad range of characteristic ages at return (Healey 1991), and Oregon populations have been categorized by the relative age at which females mature (Nicholas and Hankin 1989). Thus populations that produce significant proportions of age 3 females are referred to as "early" maturing, whereas populations that typically produce significant proportions of age 5 and age 6 females are referred to as "late" maturing. Within populations, the range in age at maturity is typically greater for males than for females. Among coastal populations as a whole, males mature from ages 2 to 6 and females mature from ages 3 to 6. Chinook "jacks" are precocious males returning at age 2 or 3. An age 7 fish of either sex has been observed only very rarely in Oregon. Both environmental and genetic factors cause chinook salmon populations to exhibit variation between years and between river basins in the age composition of spawning adults. Populations of chinook salmon that mature at relatively earlier ages are subjected to lower overall ocean harvest rates because they are exposed to fisheries for fewer years (Figure 9).

Chinook salmon spawn throughout extended reaches of coastal river basins, but the species is characterized by dense aggregations of spawners concentrated in short stream reaches of mainstems or relatively large tributaries, rather than by an even distribution of spawners throughout river basins. The parents normally exhibit strong homing to their natal stream. The female digs a nest (redd) in the gravel and lays her eggs which are immediately fertilized by accompanying adult males or jacks. The eggs are covered by digging and displacing gravel from the upstream edge of the nest. Each female lays between 3,000 and 6,000 eggs, depending upon her age and size (Nicholas and Hankin 1988). The adults die soon after spawning. Eggs and alevins incubate in the substrate during winter and fry emerge and begin dispersing throughout the river basins during the spring and early summer.

Considerable variation occurs in the spatial and temporal distribution patterns of juvenile chinook salmon among and within populations in coastal river basins. Overall, underyearling juveniles rear in riverine reaches of coastal rivers for periods ranging from about 3 to about 6 months and rear in estuary reaches for periods of up to 5 months (Figure 10). Nearly all Oregon coastal chinook salmon enter the ocean as underyearlings during their first year of life. By way of comparison, juvenile chinook salmon rear in the riverine and estuarine reaches for a longer duration than juvenile chum salmon; and, unlike coho salmon, juvenile chinook only rarely overwinter in coastal rivers. In some rivers, essentially no juveniles remain in freshwater rearing areas after about the end of July. In other rivers, juveniles still are relatively abundant in upriver rearing areas throughout the summer and early autumn. Juvenile chinook salmon are generally most abundant in Oregon estuaries during late June through August (Nicholas and Hankin 1989).

Chinook salmon from Oregon coastal river basins are distributed in coastal waters from southern California through Southeast Alaska (Figure 11) and the oceanic migration pattern of these populations apparently has a

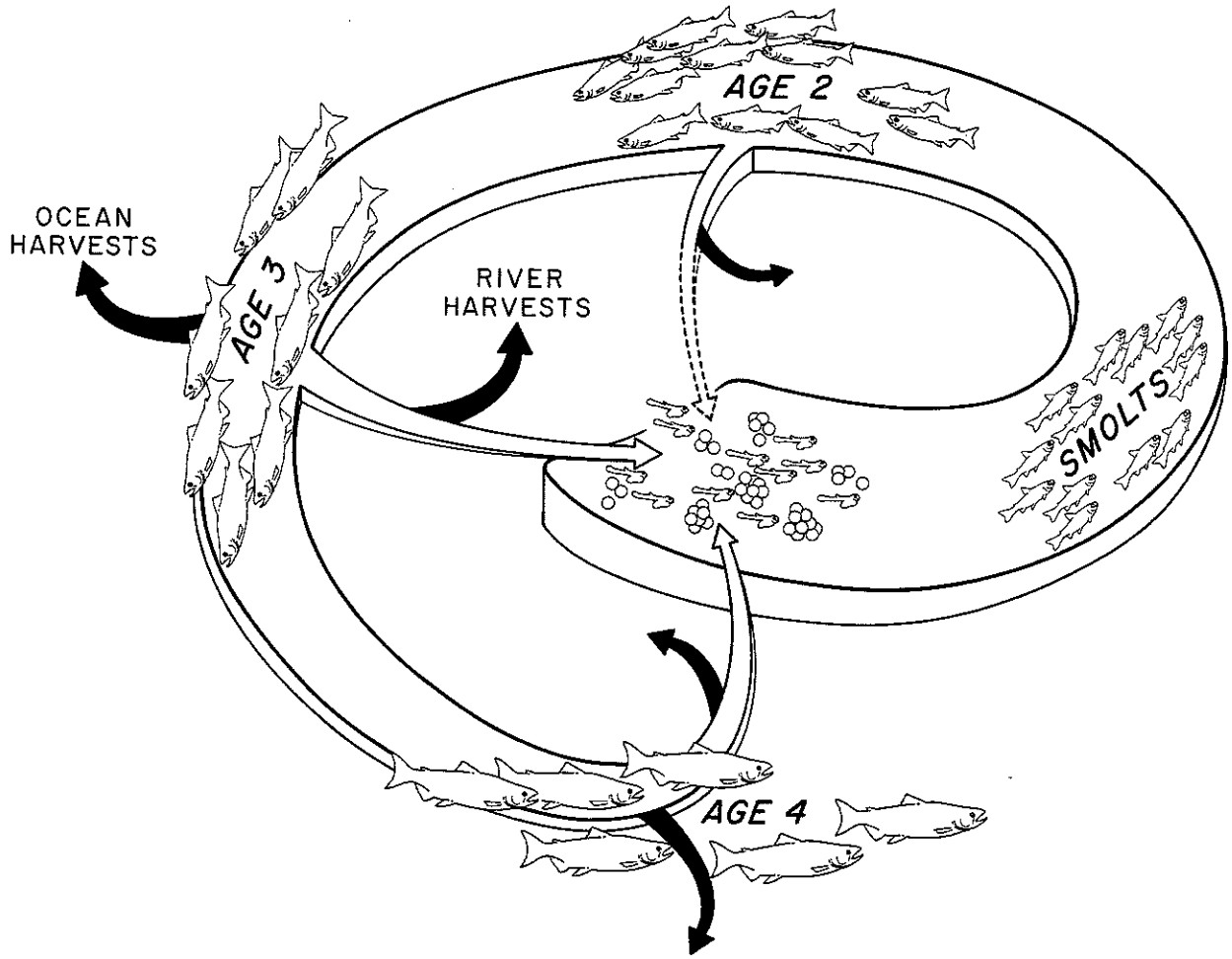
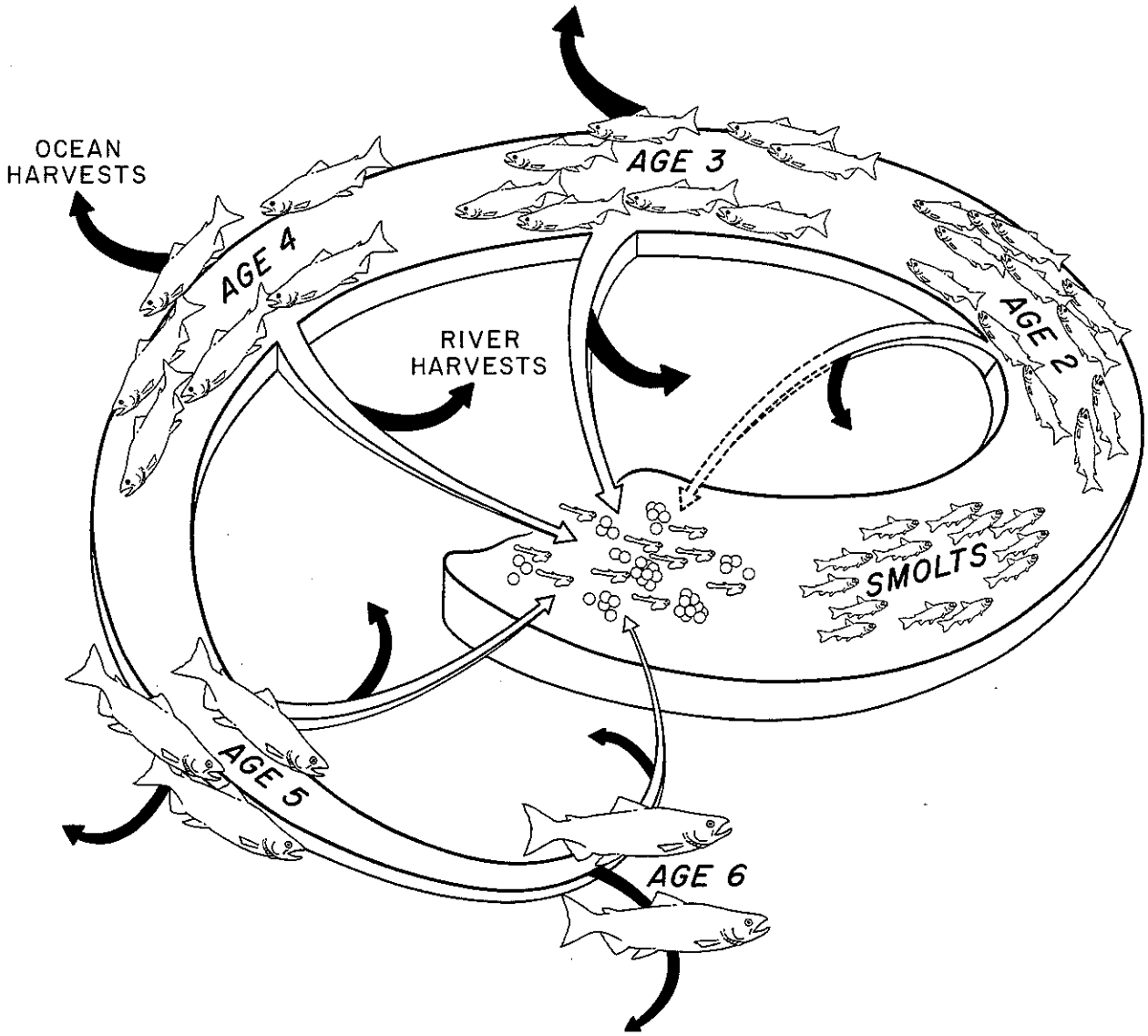


Figure 9. Comparison of the vulnerability to ocean fisheries of early-maturing (left panel, page 16) and late-maturing (right panel, page 17) fall chinook salmon.



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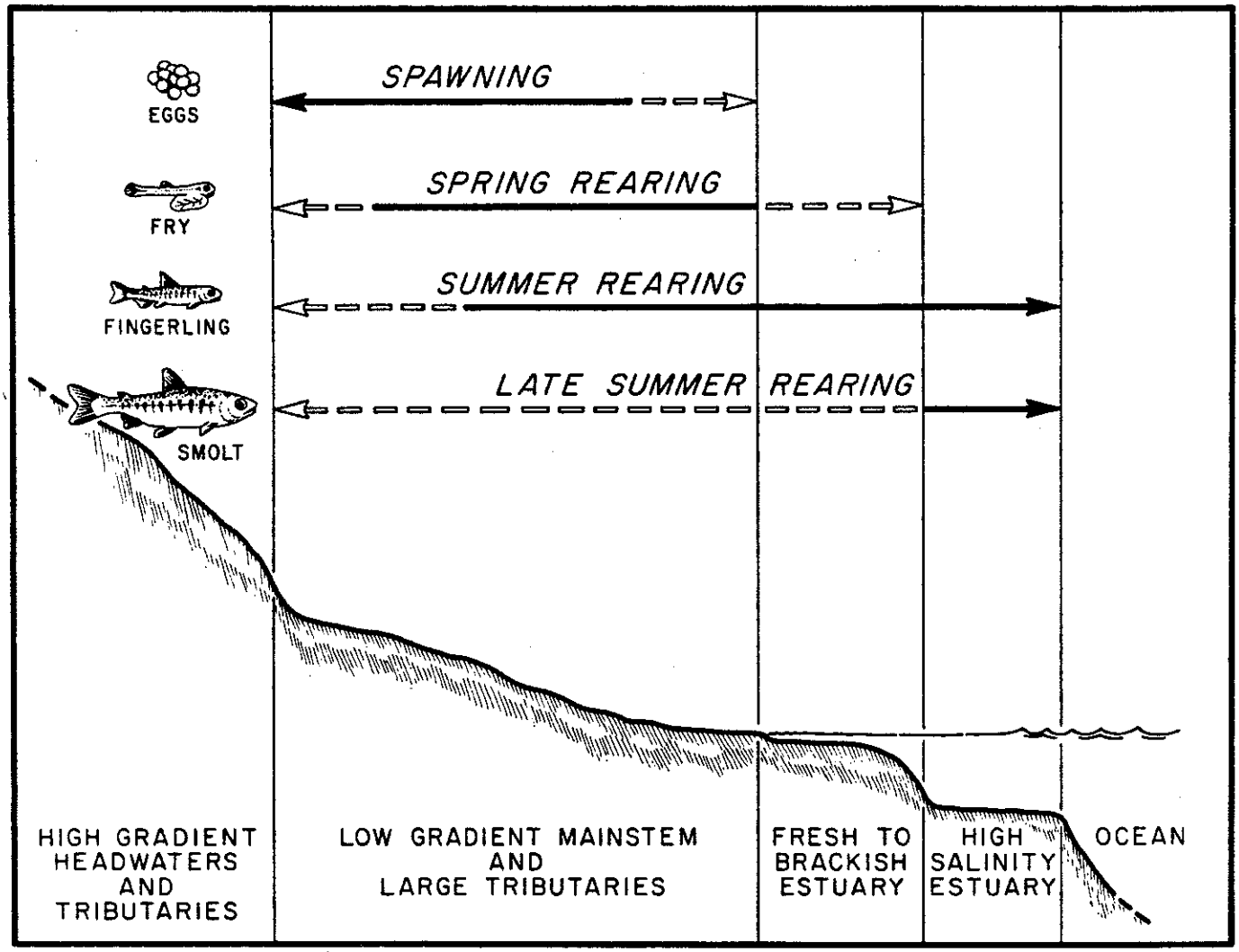

Figure 10. Spatial and temporal patterns of distribution of juvenile chinook salmon in Oregon coastal rivers.

heritable component. Among the coastal chinook salmon populations that have been tagged, two typical oceanic catch-distribution patterns have been noted:

(1) Chinook salmon populations from Elk River and north generally rear in the ocean from Oregon through Alaska. Populations from the central and north coast apparently spend most of their oceanic life off British Columbia and southeast Alaska.

(2) Chinook salmon populations from Rogue River and south generally rear in the ocean off southern Oregon and northern California.

Habitat Requirements

The freshwater habitat requirements of chinook salmon, like other salmonids, can be described in relation to several basic life history stages: upstream migration, resting prior to spawning, spawning, incubation, rearing, and downstream migration.

Because of their comparatively large body size, chinook salmon generally require greater water depths for upstream migration than coho, steelhead, or cutthroat. Spring Chinook salmon are capable of leaping significant

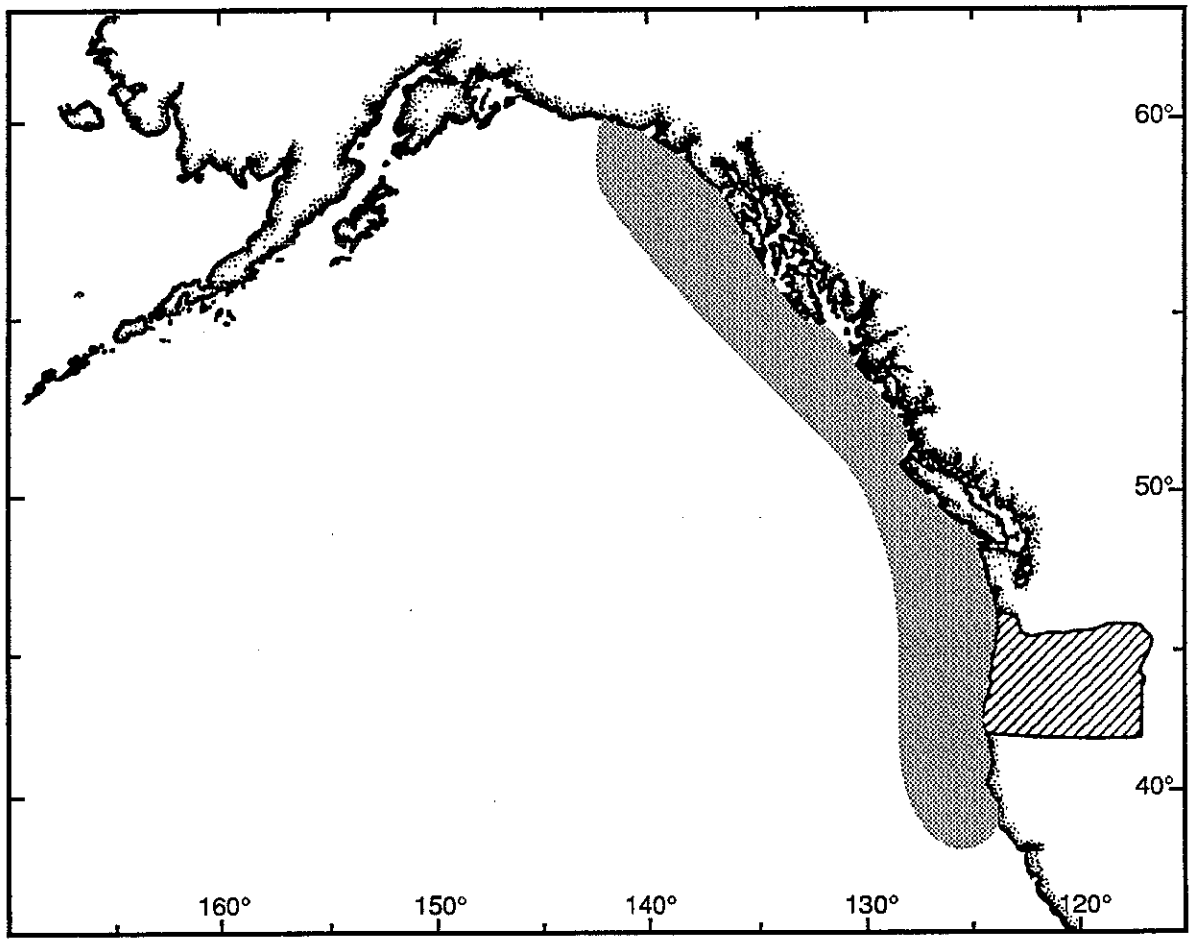

Figure 11. Presumed predominant range in oceanic waters of chinook salmon from Oregon coastal streams.

barriers in streams, but many stream reaches that would be passable by coho and steelhead are migrational barriers to fall chinook salmon. Chinook salmon also require "holding" pools within reasonable proximity to spawning areas where they rest and mature. The requirement for these holding pools is especially critical for spring chinook salmon that may be in fresh water for 4 to 6 months during summer low flows prior to spawning.

Chinook salmon spawn in stream gravels and cobbles that range from pea to cantaloupe size. Chinook salmon spawn in suitable reaches of mainstem coastal rivers and the lower reaches of larger tributaries. Because eggs and alevins may incubate in the stream substrate from about November through April, instability or scouring of spawning bars and deposition of sediment associated with high streamflow events can cause serious reductions in survival of the young fish.

Fry typically emerge from the stream bed in March, April, and May, rear initially along tributary and mainstem stream margins, and gradually move into deeper water as they grow to larger size. Juvenile chinook salmon may move downstream to rear in mainstem or estuarine reaches, often completely vacating incubation and nursery areas by June or July. Optimum rearing temperatures for juvenile chinook salmon probably differ for specific populations, but peak daily water temperatures in the range of 68-70°F are usually on the upper limit of acceptability. Juvenile chinook salmon rear in the broad, relatively exposed riffles, runs, and pools of mainstem coastal rivers as they feed, grow, and gradually move downstream to tidal reaches where they may rear for additional weeks or months prior to entering the ocean. Juvenile chinook salmon make extensive use of instream structure, especially woody debris, and stream-margin vegetation as feeding stations, as cover from predators, and as sheltered resting stations during daily high-temperature periods.

Juvenile chinook salmon are present in some portion of all Oregon estuaries from at least April through November and, as previously noted, are most abundant during late June through August. The extensive utilization (through space and time) of estuaries by rearing chinook salmon juveniles suggests that these estuarine habitats are critical to the populations. If this is true, alteration or loss of estuarine habitat would have significant adverse impact on the productive capacity of the population.

Some juvenile chinook salmon overwinter in fresh water, and these fish may represent an important genetic segment of specific populations. These fish probably overwinter in habitats similar to those used by coho salmon: off-channel alcoves, beaver ponds, and slow pools containing cover provided by significant accumulations of woody debris.

Hatchery Production

About 3.5 million chinook salmon smolts have been released from Oregon coastal river hatcheries during recent years, yet production of chinook salmon in Oregon coastal river basins is strongly dependent on wild fish. Fewer than half of the basins that support chinook salmon runs have been supplemented with hatchery fish in recent years. Both north- and south-migrating chinook salmon are propagated in Oregon coastal hatcheries. North-migrating populations that are propagated in Oregon coastal hatcheries include Trask (fall and spring), Nestucca (fall and spring), Salmon (fall), Alsea (fall), Coquille (fall), and Elk (fall). South-migrating populations that are propagated in hatcheries include the Rogue, Chetco, and North Umpqua rivers. About 90% of fall and 50% of spring fish in Oregon coastal river basins are believed to be wild. Overall, about 80% of adult coastal chinook salmon are probably wild (Nicholas and Hankin 1989b). Production of hatchery chinook

salmon from the Columbia River basin contributes relatively little to ocean fisheries off the Oregon coast, because most of these Columbia River populations exhibit a northward ocean migration. An experimental program that involves the release of Rogue River fall chinook salmon into the lower Columbia is currently underway and releases have reached about 800,000 juveniles annually. This experiment is designed to explore the possibility of increasing offshore abundance of chinook salmon along the central Oregon coast.

STEP projects also release varying numbers of hatch-box fry or presmolts annually in a variety of locations.

Fisheries

Harvest Management Framework

Oregon's coastal chinook salmon migrate extensively along the West Coast of North America placing them as prime contributing stocks to sport and commercial fisheries in both the Pacific Salmon Commission (PSC) and Pacific Fisheries Management Council (PFMC) management areas (Figure 12). The PSC was created by a treaty ratified by the United States and Canada in 1986 and is responsible for managing salmon fisheries north of the United States-Canadian border through southeast Alaska. Both United States and Canadian citizens are on the Commission, which manages four major chinook salmon fishing areas under PSC jurisdiction: Southeast Alaska (SEAK); North/Central British Columbia (NC-BC); the West Coast Vancouver Island (WCVI); and Strait of Georgia (GS).

Under the Pacific Salmon Treaty both countries have agreed to halt the decline in natural chinook salmon escapements and by 1998 rebuild stocks to goals established by each country. The PSC's primary function is to control harvest. The PSC has adopted fixed ceiling harvest regimes for all PSC fisheries, requiring that catch in each regulated fishery not exceed a fixed number annually, during each of 15 years from 1985-1998. These ceilings are designed to yield increased spawning escapements over time, increased juvenile production and eventual stock rebuilding. Concurrent with harvest restraints in PSC fisheries, PFMC fisheries are required to "pass through" any fish saved by the curtailed PSC fisheries so these fish would principally accrue to the spawning grounds. This pass through agreement requires certain restraints on local fisheries not to intercept fish needed to rebuild the spawning population of depressed chinook salmon populations in local rivers.

The PFMC (Council) regulates ocean fisheries off the West Coast of Washington, Oregon and California within the Exclusive Economic Zone (EEZ) from 3-200 nautical miles and is one of seven regional councils created by the Magnuson Fishery Conservation and Management Act (MFCMA 1976). Its role is to develop, monitor, and revise management plans for fisheries conducted within the EEZ. Inside 3 miles and in estuaries and rivers, each state manages their salmon resources, but under Council salmon fishery management plan guidelines. West Coast stocks of chinook and coho salmon are directly managed by the PFMC in ocean fisheries. Two large fishing regions are regulated by the Council: North of Cape Falcon and South of Cape Falcon, with smaller management units identified to manage particular populations or stocks. These, and other

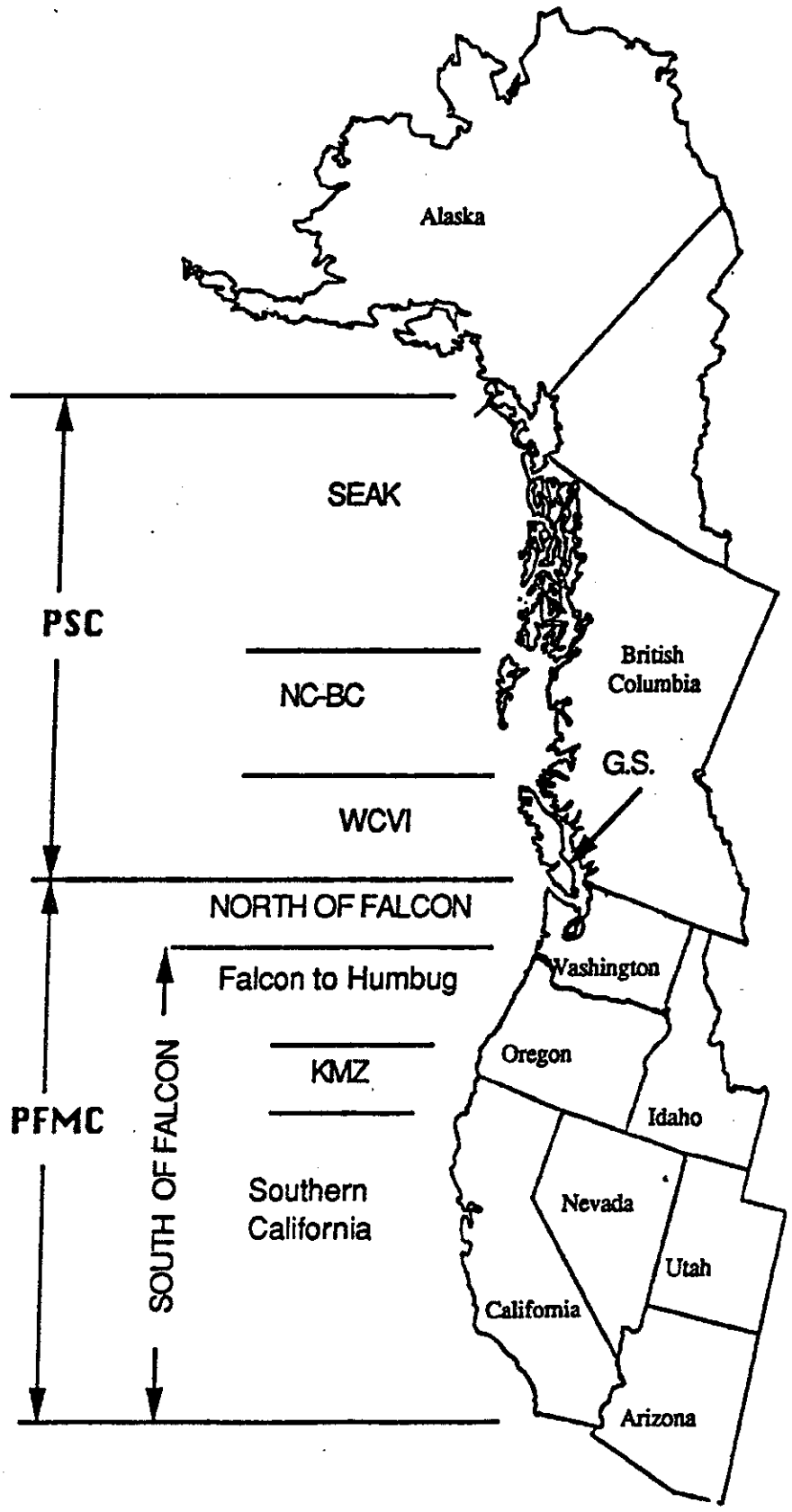

Figure 12. Harvest management jurisdictions and fishery regulation areas relevant to Oregon coastal chinook salmon.

smaller management areas, have harvest regulations imposed to limit catch on depressed chinook salmon stocks.

The wide distribution of Oregon coastal chinook salmon populations requires a comprehensive management approach under PSC, PFMC and state jurisdictions. These management systems are just now beginning to take shape and structure relative to Oregon coastal populations and stocks. Much is still not known about escapements and fishery contributions.

ODFW presently aggregates coastal chinook salmon populations into three groups based on the area in which they are thought to be harvested in the ocean. These aggregations are presently used to represent specific population aggregates for ocean harvest management. Using tagged hatchery fish from Oregon coastal "indicator" stocks, the ocean catch distribution can be determined for these three stock aggregates. Ocean harvest for the Far North Oregon Coastal group (represented by Salmon River fall chinook salmon) occurs primarily off SEAK and NC-BC. The Mid Oregon Coastal group (represented by Elk River fall chinook salmon) is harvested primarily off the West Coast of Vancouver Island and in Oregon, while the South migrating group (Rogue River fall chinook salmon) is harvested off California and Oregon.

Within the PFMC area, implementation of regulations in consideration of treaty Indian rights and stock conservation concerns have caused shifts and/or reductions in harvest of chinook salmon between management subareas. For example, ocean harvest in the Washington and KMZ subareas decreased in recent years. The allocation and conservation concerns for Klamath fall chinook salmon in the Klamath Management Zone (and adjacent areas) have dramatically affected both Oregon and California ocean fisheries causing a significant shift in impacts of fisheries on specific populations, fishing effort and catch.

The productivities of most Oregon chinook salmon populations are not known, and are expected to vary considerably among populations and years. The recently adopted Coastal Chinook Salmon Management Plan (Chinook Plan)(ODFW 1991) states the expectation that the majority of wild coastal chinook salmon populations should be able to sustain, on the average, harvest of about two-thirds of each brood year. This means that a harvest of roughly two out of three adults throughout the brood year should be sustainable and provide a relatively optimum harvest number. In the ocean, individual chinook salmon from relatively less and relatively more productive populations are mixed together. Generally, spring populations are subjected to lower harvest rates in the ocean than fall populations because they enter the rivers earlier during the season and are therefore protected from additional exposure to ocean fisheries during their final year of life. However, reduced catch of spring chinook salmon in the ocean may be offset by increased catch in fresh water relative to fall chinook salmon.

Contribution to Fisheries

Oregon's ocean chinook salmon harvest has averaged 277,000 fish since 1971. Oregon ocean troll harvest has averaged 239,000 fish (1971-91) and ranged from 64,000 to 530,000. Recreational harvest has averaged 38,000 fish and ranged from 14,000 to 79,000 fish (1971-91). Freshwater recreational

chinook salmon harvest in coastal estuaries and streams has averaged about 53,400 fish and ranged from 15,200 to 86,500 during the period 1980-90.

The origin of chinook salmon caught in the ocean off Oregon is not well documented, and considerable variation probably exists in the relative proportion of specific populations in the catch in any given year. Most of the efforts to identify the origin of chinook salmon caught in the ocean off Oregon have attempted to estimate the occurrence of specific populations that are of critical interest to harvest management (e.g. Klamath fall chinook salmon). One analysis of the origin of chinook salmon landed in Oregon ocean ports by the troll fishery during the period 1979-86 indicated that landings were dominated by chinook salmon from the Sacramento, Klamath, and Rogue basins. Although empirical evidence was not available, Nicholas and Hankin (1989) speculated that wild chinook salmon produced in a variety of smaller river basins in northern California and southern and central Oregon (e.g. Mad, Eel, Smith, Chetco, Sixes, Elk, Coquille, Coos, Siuslaw) were collectively as important as each of these three large river basins (Figure 13). Columbia River chinook salmon populations are thought to make up less than 5% of the catch off Oregon at the present time.

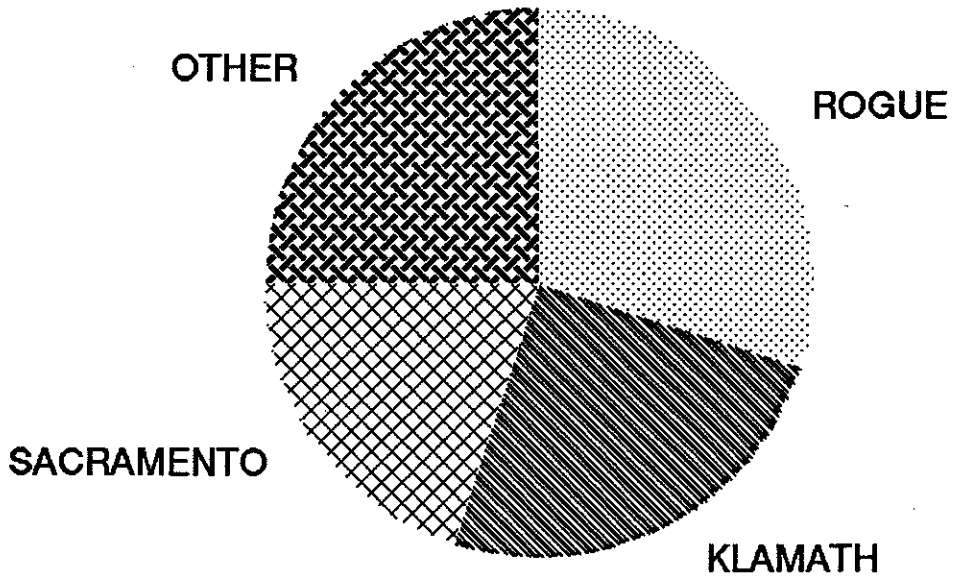

Figure 13. Depiction of hypothetical origin of contemporary catch of chinook salmon in the ocean off Oregon. The group "Other" consists primarily of fish originating from streams ranging from northern California through the Columbia River.

Effects of Ocean Environment on Annual Catch

The harvest of chinook salmon off Oregon is subject to highly variable ocean conditions. These conditions can make the fish more or less available to harvest, depending on the situation. Factors such as localized water circulation, or upwelling conditions along the coast, cause large changes in sea surface temperatures and feeding conditions. These changes can either concentrate or disperse fish, creating significant variations in salmon catch rates and landings.

Status of Populations

The status of coastal wild chinook salmon populations has been recently assessed by the Chinook Plan (ODFW 1991) and by Chilcote et al. (1992). The results of these classifications are generally consistent and represent an assessment of the recent performance trend of each population. The status of each population has been reviewed and assessed for this report relative to abundance during the last 20 years based upon the criteria presented in **APPENDIX A.** Of the 55 wild populations identified, 30 were classified as healthy, 8 as special concern, 8 as depressed, and 9 as unknown (Tables 3 and 4). Although this status assessment appears relatively favorable in comparison to coho salmon, a review of the status of chinook salmon populations within coastal geographic regions shows that 9 of the 13 populations of fall chinook salmon south of Bandon were judged to be either special concern or depressed, and only 3 were judged to be healthy. Thus, whereas the north-migrating coastal chinook salmon populations are generally healthy, south-migrating coastal chinook salmon populations generally are not.

Coastal chinook salmon populations provide a striking example of the extent to which "healthy" populations are influenced by the environment. During the last 10 years, many south-migrating populations increased from very low levels to very high levels in 1985-88 and have declined again to very low levels in 1991-92. For example, the run of spring and fall chinook salmon entering the Rogue River basin was about 30 thousand fish in 1983, increased to about 200 thousand fish in 1988, and declined to about 30 thousand fish in 1992. During the same 10 year period, many north-migrating populations apparently increased to record levels during 1988 and have since declined to more moderate levels in 1990-91.

Twenty-one populations of fall chinook salmon and only one population of spring chinook salmon on the Oregon coast have been identified (Chilcote et al. 1992) that are considered in compliance with standards of abundance and hatchery influence of the ODFW Wild Fish Management Policy.

Table 3. Provisional status of wild fall chinook salmon populations in Oregon coastal basins. [Revision of status presented in ODFW (1991)].

Population	Status[a]	Comments
Nehalem R.	Healthy	
North Fork Nehalem R.	Healthy	
Salmonberry R.	Unknown	
Tillamook Bay		
Miami R.	Healthy	
Kilchis R.	Healthy	
Wilson R.	Healthy	
Trask R.	Healthy	
Tillamook R.	Healthy	
Nestucca R.	Healthy	
Little Nestucca R.	Healthy	
Neskowin Cr.	Unknown	May not be a viable population
Salmon R.	Special concern	Hatchery strays
Siletz R.	Healthy	
Schooner Cr.	Unknown	
Drift Cr.	Unknown	
Yaquina R.	Healthy	
Beaver Cr.	Unknown	May not be a viable population
Alsea R.	Healthy	
Drift Cr.	Healthy	
Yachats R.	Unknown	
Big Cr.	Unknown	May not be a viable population
Siuslaw R.	Healthy	
North Fork Siuslaw R.	Healthy	
Umpqua R.		
Smith R.	Healthy	
North Fork Umpqua R.	Healthy	
South Fork Umpqua R.	Healthy	
Coos R.	Healthy	
Millicoma R.	Healthy	
Coquille R. (excluding the S.F.)	Healthy	
South Fork Coquille R.	Healthy	
Floras Cr. (New R.)	Unknown	
Sixes R.	Special concern	Hatchery strays
Elk R.	Special concern	Hatchery strays
Euchre Cr.	Depressed	
Rogue R.		
Lower Rogue R.	Depressed	
Illinois R.	Depressed	
Applegate R.	Healthy	
Middle Rogue R.	Healthy	
Upper Rogue R.	Healthy	

Table 3 Continued.

Population	Status[a]	Comments
Hunter Cr.	Depressed	
Pistol R.	Depressed	
Chetco R.	Special concern	Hatchery strays
Winchuck R.	Depressed	

[a] *Status is based on criteria in* **APPENDIX A.**

Table 4. Provisional status of wild spring chinook salmon populations in Oregon coastal basins. [Revision of status presented in ODFW (1991)].

Population	Status[a]	Comments
Nehalem R.	Healthy	
Tillamook Bay		
Kilchis R.	Special concern	Hatchery strays
Wilson R.	Special concern	Hatchery strays
Trask R.	Special concern	Hatchery strays
Nestucca R.	Special concern	Hatchery strays
Siletz R.	Healthy	Small, variable run
Alsea R.	Healthy	Small, variable run
Siuslaw R.	Unknown	May not be a viable population
Umpqua R.		
North Fork Umpqua R.	Healthy	
South Fork Umpqua R.	Depressed	
Coquille R.	Depressed	
Rogue R.		
Upper Rogue R.	Healthy	

[a] *Status is based on criteria in* **APPENDIX A.**

CHUM SALMON
Oncorhynchus keta

Chum salmon were formerly abundant in most mid and north coastal rivers in Oregon and in lower Columbia River tributaries. These populations have undergone significant declines over the last 35 years resulting in several local populations being on the verge of extinction. Chum salmon have been added to the Oregon Sensitive Species List, which serves as an early-warning system to alert land managers and the public that the species may qualify for threatened or endangered status in the future. Chum salmon in Oregon rivers exhibit a strikingly uniform life history and dependence on similar types of habitat in freshwater and estuarine environments.

Description

Adult chum salmon are distinguished from other salmon by the absence of large black spots on the body and fins, a slender caudal peduncle, and dark color on the tips of all fins but the dorsal fin. In the ocean, chum salmon exhibit a metallic blue coloration on the dorsal surface, but maturing adults in fresh water develop irregular reddish to dusky streaks or bars across the sides of the body giving the fish a "calico" appearance. Spawning adults have white tips on pelvic and anal fins. Chum salmon in Tillamook Bay average 11.0 pounds at maturity (Oakley 1966). Individuals may attain a length of 43 in. and weigh up to 46 pounds, second only to chinook salmon in size (Salo 1991). Young chum salmon have slender parr marks scarcely extending below the lateral line and green iridescence on the back (Bakkala 1970; Hart 1973).

Distribution

Chum salmon have the widest distribution of any Pacific salmon (Bakkala 1970). Streams inhabited along the North American coast extend from the Sacramento River (Hallock and Fry 1967) northward (including the Aleutian Islands) to the Arctic shore of Alaska and as far east as the Mackenzie River on the Arctic coast of Canada (Bakkala 1970). Oregon lies near the southern end of the range of chum salmon in North America. ODFW has provisionally identified 26 populations of wild chum salmon on the Oregon coast. The largest population in Oregon occurs in Tillamook Bay (primarily in the Miami and Kilchis rivers). Other significant populations are found in the Nehalem and Nestucca rivers and in tributaries of Netarts Bay and Sand Lake. Small populations persist in Neskowin Creek and the Necanicum, Salmon, Siletz, Yaquina, Alsea, Siuslaw, Umpqua, and Coos rivers (Figure 1). Chum salmon are occasionally reported in streams of south coastal Oregon (Reimers 1970).

Life History

Chum salmon return to Oregon coastal streams in the fall of the year. Chum salmon primarily spawn in November and early December in Oregon coastal rivers (Henry 1953; Lannan 1980). The average age at maturity for chum salmon returning to Tillamook Bay is 43.4% 3-year-olds, 55.3% 4-year-olds, and 1.3% 5-year-olds (Figure 14), excluding the atypical age composition recorded in 1983 and 1989. The age composition of chum salmon entering Whiskey Creek,

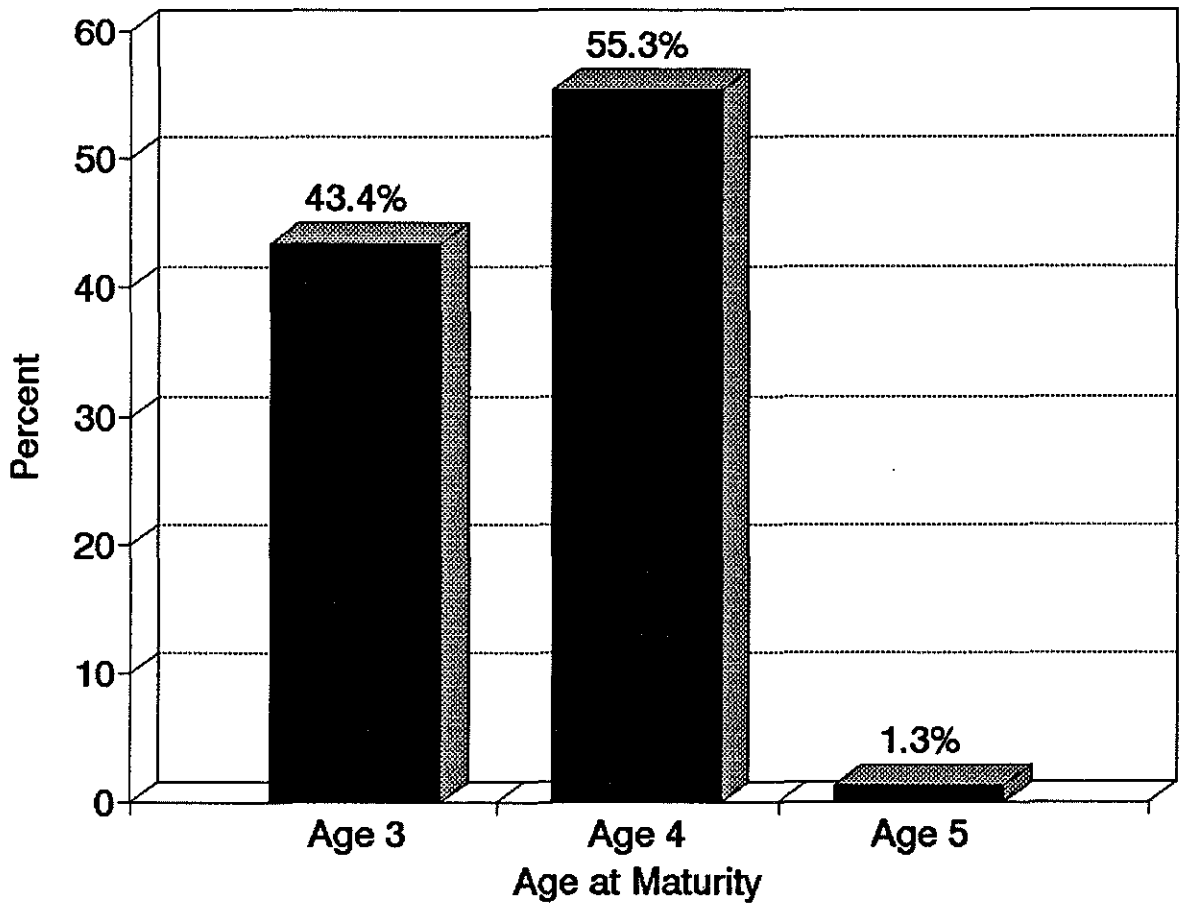

Figure 14. Average age at maturity of chum salmon in Tillamook Bay.

Netarts Bay, has ranged from age 2 through age 5 with the run primarily consisting of age 3 and age 4 fish similar to the chum salmon run in Tillamook Bay (Berry 1975). Males usually predominate early in the run and females late in the run, although the overall ratio of males to females approaches 1:1 over the entire spawning season (Henry 1954; Bakkala 1970).

Chum salmon usually migrate a short distance upstream above the head of tidewater to spawn in Oregon streams. Chum salmon are strong swimmers and able to withstand currents of moderate to high velocities; however, they are not jumpers and are usually found below the first barrier of any significance in a river.

Chum salmon exhibit strong site fidelity to their natal stream. Females select a suitable nest site in mainstream and tributary streams and dig one or more redds (nests) to deposit her eggs which are fertilized by an accompanying male. Females release an average 2,400-3,000 eggs, although large females may release over 4,000 eggs (Scott and Crossman 1973). After depositing eggs in the redd, the female immediately moves upstream and covers them with gravel dislodged with her tail. Once egg deposition is completed, the female guards the nest site until death. All chum salmon die after spawning within a period of about 11 to 15 days after arrival into the stream.

Incubation and emergence are affected by stream flow, water temperature, dissolved oxygen, gravel composition, spawning time, spawner density, and genetic characteristics of the stock. Chum salmon eggs hatch in 31-46 days at 45°F. The alevins remain in the gravel about 54-77 days until yolk sac absorption is completed before emerging to migrate downstream. Chum salmon have lower oxygen requirements than either coho salmon or steelhead, reflecting a lower metabolic demand. Chum salmon alevins in the gravel are photonegative from day 6 to 25 after hatching. After this time, there is a rapid reversal to photopositive behavior corresponding with the onset of emergence from the gravel (Salo 1991).

Juvenile chum salmon migrate north into the Gulf of Alaska after leaving the estuaries of Oregon. Juvenile North American chum salmon occur along the Pacific Coast in a narrow band that broadens to about 25 miles offshore in southeastern Alaska (Hartt 1980). The juveniles are not scattered and tend to follow a definite migratory route (Hartt and Dell 1986). In the Gulf of Alaska, Pacific Coast stocks appear to migrate northerly, westerly, and southwesterly along the coastal belt of the Gulf (Hartt 1980). Chum and sockeye salmon *O. nerka* juveniles tend to remain nearshore, whereas juvenile coho and chinook salmon and steelhead occur in both coastal as well as offshore localities, indicating a more diverse migration pattern (Hartt 1980; Salo 1991). Immature chum salmon (after 1 January) from Asia and North America form two concentrations that overlap in the eastern North Pacific Ocean after the first winter at sea, but appear to migrate independently in the following spring and summer (Neave et al. 1976). North American chum salmon are primarily found in the Gulf of Alaska east of 175°E longitude (Figure 15). Maturing chum salmon stocks destined for southeastern Alaska, British Columbia, Washington, and Oregon move north, then east, then southward along the coast to their home streams (Neave et al. 1976; Hartt 1980). One chum salmon tagged on the high seas was recovered in Moss Creek, Tillamook Bay. The age 3 female was tagged on 25 May 1962 in the Gulf of Alaska at 56° 12′N, 142° 31′W and recovered spawned out on 9 December 1962 1 mile above tidewater (Oakley 1966).

Habitat Requirements

Chum salmon usually migrate a short distance upstream above the head of tidewater to spawn in Oregon streams. Chum salmon are strong swimmers and able to withstand currents of moderate to high velocities; however, they are not jumpers and are usually found below the first barrier of any significance in a river. Females generally select clean gravel primarily smaller than 6 inches in diameter to deposit eggs. Most chum salmon in Washington spawn at water velocities between 0.7 and 2.8 ft/s (mean of 1.7 ft/s) at depths ranging from 5.3 to 19.6 in. (mean of 10.7 in.) (Salo 1991).

Chum salmon fry typically emerge during the night and promptly migrate downstream to estuarine waters (Neave 1955) where they linger until they make the transition to higher salinity water. Fry cannot live for extended periods in fresh water (Baggerman 1960). A short residence in a mesohaline (10-15 ppt) estuarine environment may be needed for complete adaptation to seawater (Iwata and Komatsu 1984). Increasing salinities also prompt the schooling behavior of chum salmon fry (Shelboun 1966).

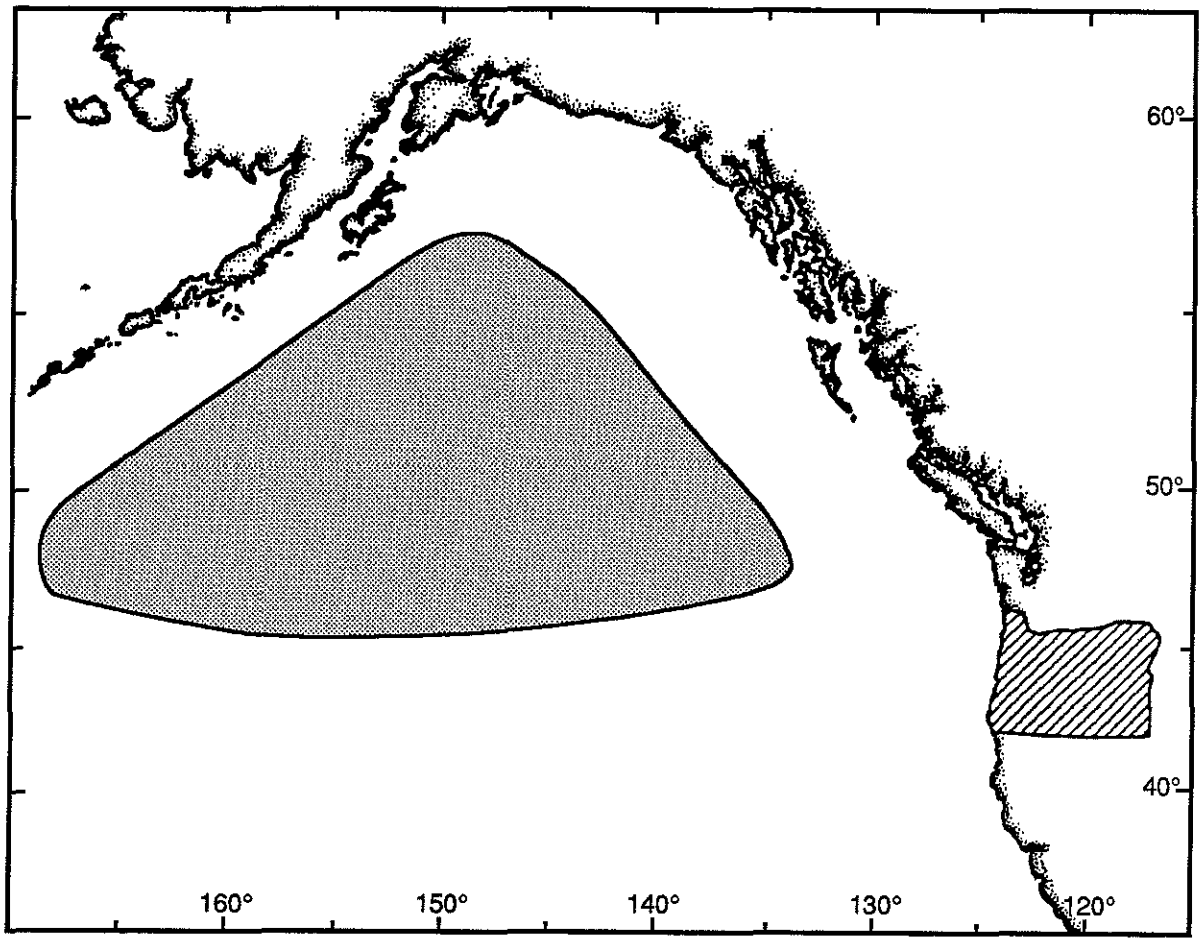

Figure 15. Presumed predominant range in oceanic waters of chum salmon from Oregon coastal streams.

When chum salmon fry leave the rivers, they begin feeding in estuaries and shallow nearshore marine habitats on detritus-based epibenthic and neritic food resources. Harpacticoid copepods and gammarid amphipods provide the principal source of food (Salo 1991). The movement offshore generally coincides with the decline of inshore prey species and time when fish have grown to a size that allows them to feed upon larger organisms and avoid predators (approximately 1.8-2.2 in. fork length).

Hatchery Production

There is no production of chum salmon at public hatcheries. However, a private hatchery on Nehalem Bay has released an average of 500,000 juvenile chum salmon (fed-fry) annually since 1981. About 1,200 adults returned in 1991. This is the only private hatchery currently in operation.

Fisheries

The history of early fishing seasons and gear regulations in Oregon coastal rivers are discussed by Gharrett and Hodges (1950). Oregon coastal rivers were closed to commercial fishing after 1957 by initiative petition (ORS 511.055), with the exception of Tillamook Bay which was limited to a 30-day commercial fishing season for chum salmon to be established between 25 October and 5 December. From 1957 through 1961, the commercial season in Tillamook Bay was set by the Oregon Fish Commission from 1 November to 30 November. The Oregon Fish Commission closed all commercial salmon fishing in Tillamook Bay in 1962 when the run of chum salmon became severely depleted and the percentage of other salmon stocks (coho and chinook salmon) and steelhead incidentally harvested in the bay increased. In the late 1960s, a recreational fishery for chum salmon developed near the mouths of tributaries entering Tillamook Bay. Regulation of the sport fishery has become more restrictive through time, and starting in 1992, no catch was allowed. Catch and release fisheries are still allowed on the Miami and Kilchis rivers.

The population of chum salmon returning to Tillamook Bay has been primarily driven by factors governing natural mortality alone. Harvest of Oregon chum salmon in offshore fisheries has not been evaluated. Such studies would be difficult because of the small size at which chum salmon migrate to the ocean and the relatively low abundance of Oregon chum salmon populations. Presumably, there is incidental bycatch of chum salmon in the ocean troll salmon fishery. It is unknown whether nearshore net fisheries off Washington and British Columbia intercept returning Oregon chum salmon.

Landings from the Tillamook Bay commercial fishery (the primary area of production in Oregon) were summarized and converted from pounds to numbers based on average weights from fish buyers' records by Oakley (1962, 1966). Records from 1923-47, when salmon were caught in Tillamook Bay from August to December, show that 88% of the total chum salmon catch in pounds was made in November (Oakley 1966) (Figure 16). Virtually all chum salmon were caught from October through December. Scattered landings reported for other months probably represent fish caught during this time period but not reported until a later date or may have been coho salmon in poor condition reported as chum salmon (Henry 1953).

The annual commercial catch of chum salmon in Tillamook Bay (1923-61) ranged from 2,804,414 lbs (264,570 fish) in 1928 to 11,978 lbs (1,150 fish) in 1960 (Table 5). Economic conditions have influenced the catch, i.e., the small catch recorded in 1932 resulted from poor prices paid for fish and did not reflect the size of the run (Oakley 1962). The fishery for chum salmon was not as intensive as for other salmon until after World War II because the flesh of chum salmon is of poor quality and inferior to other salmon (Gharrett and Hodges 1950). Annual landing records show a declining trend from 1947 through 1961 with a sharp decrease in landings after 1954 (Figure 17). Similar declines were noted in British Columbia, Washington, and the Columbia River (Oakley 1966), suggesting that one or more factors simultaneously influenced survival of these stocks in the ocean.

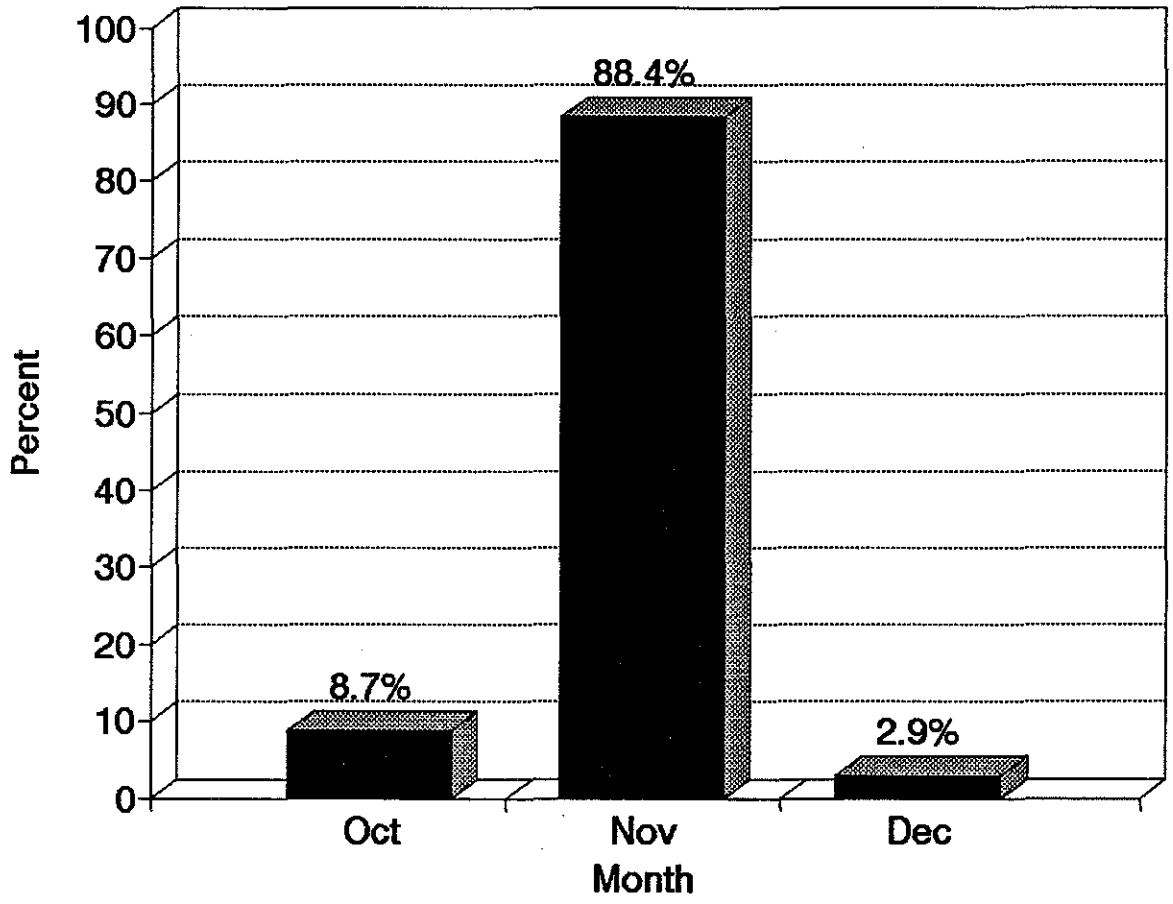

Figure 16. Average landings of chum salmon (round weight) by month in the Tillamook Bay commercial fishery, 1923-47. Data from Oakley (1966).

Status of Populations

Annual estimates of the total population abundance of Tillamook Bay chum salmon since 1948 (Table 6, Figure 18) were calculated from a population estimate obtained in 1953 from tag-recapture studies (Henry 1964), annual landings (numbers) presented by Oakley (1962), and annual spawning fish surveys (average peak fish/mile counts) in tributaries of Tillamook Bay (Cooney and Jacobs 1992).

Based on current evidence, it appears that the potential maximum run of chum salmon is about 46,000 fish in Tillamook Bay with existing environmental conditions. Recruitment of chum salmon by brood year (ages 3 through 5 combined in successive years of returns) has ranged between 2,606 (1957 brood year) to 33,888 (1970 brood year) where estimates of the age composition of the run were available (Table 7).

Oregon State University scientists constructed a trap to intercept chum salmon returning to spawn in Whiskey Creek, Netarts Bay, in 1969. The number of chum salmon captured at the facility ranged from 266 to 6,878 fish between 1969 and 1990 (Table 8). The trap was not operated in 1991. Eggs were taken

Table 5. Annual landings of chum salmon from the Tillamook Bay commercial fishery, 1923-61.[a]

Year	Pounds (round)	Estimated number	Year	Pounds (round)	Estimated number
1923	643,893	58,010	1943	379,476	37,610
1924	854,297	76,960	1944	360,976	35,850
1925	930,961	83,870	1945	777,254	72,640
1926	244,147	22,000	1946	481,920	45.420
1927	1,764,426	166,460	1947	373,664	35.830
1928	2,804,414	264,570	1948	895,009	89,320
1929	1,170,679	110,440	1949	436,168	39,190
1930	233,981	22,070	1950	191,677	18,200
1931	946,811	89,320	1951	324,981	28,310
1932	88,757	8,370	1952	167,546	14,390
1933	551,959	52,070	1953	253,087	22,120
1934	336,132	31,710	1954	296,593	26,990
1935	571,621	53,930	1955	92,692	7,130
1936	1,189,178	112,190	1956	102.322	9,330
1937	438,246	41,340	1957	137,074	12.670
1938	724,689	68,370	1958	112,678	9,930
1939	426,719	40,260	1959	68,768	6,180
1940	438,923	41,410	1960	11,978	1,150
1941	1,755,586	165,620	1961	16,435	1,560
1942	2,651,164	250,110			

[a] *Data from Cleaver (1951) and Oakley (1962).*

from a portion of the run for rearing experiments by OSU and for private hatcheries with a predetermined number allowed to spawn above the trap (Berry 1975). A fry "payback" system was also established for private hatcheries obtaining chum salmon eggs from Whiskey Creek. Average annual peak counts (fish/mile) of chum salmon spawning in Whiskey Creek from 1953 through 1968 ranged from 240 in 1955 to 1,680 in 1957 (Figure 19).

The spawning population of chum salmon has been monitored in Clear Creek, Nestucca River, since 1950 (Cooney and Jacobs 1992). With few exceptions, the run of chum salmon into Clear Creek has exhibited 4-year cycles of abundance; i.e., peak spawning runs are often followed by a peak run 4 years later and, conversely, poor spawning runs are often followed by a poor run 4 years later (Figure 20).

Twenty-six populations of wild chum salmon are recognized on the Oregon coast (Chilcote et al. 1992). The status of each population has been assessed relative to abundance during the last 20 years based upon the criteria presented in **APPENDIX A.** Ten populations were classified as healthy, 12 were classified as special concern, and 4 were classified as unknown (Table 9). In addition, four of the populations on the Oregon coast have been identified (Chilcote et al. 1992) that are considered in compliance with standards of abundance and hatchery influence of the ODFW Wild Fish Management Policy.

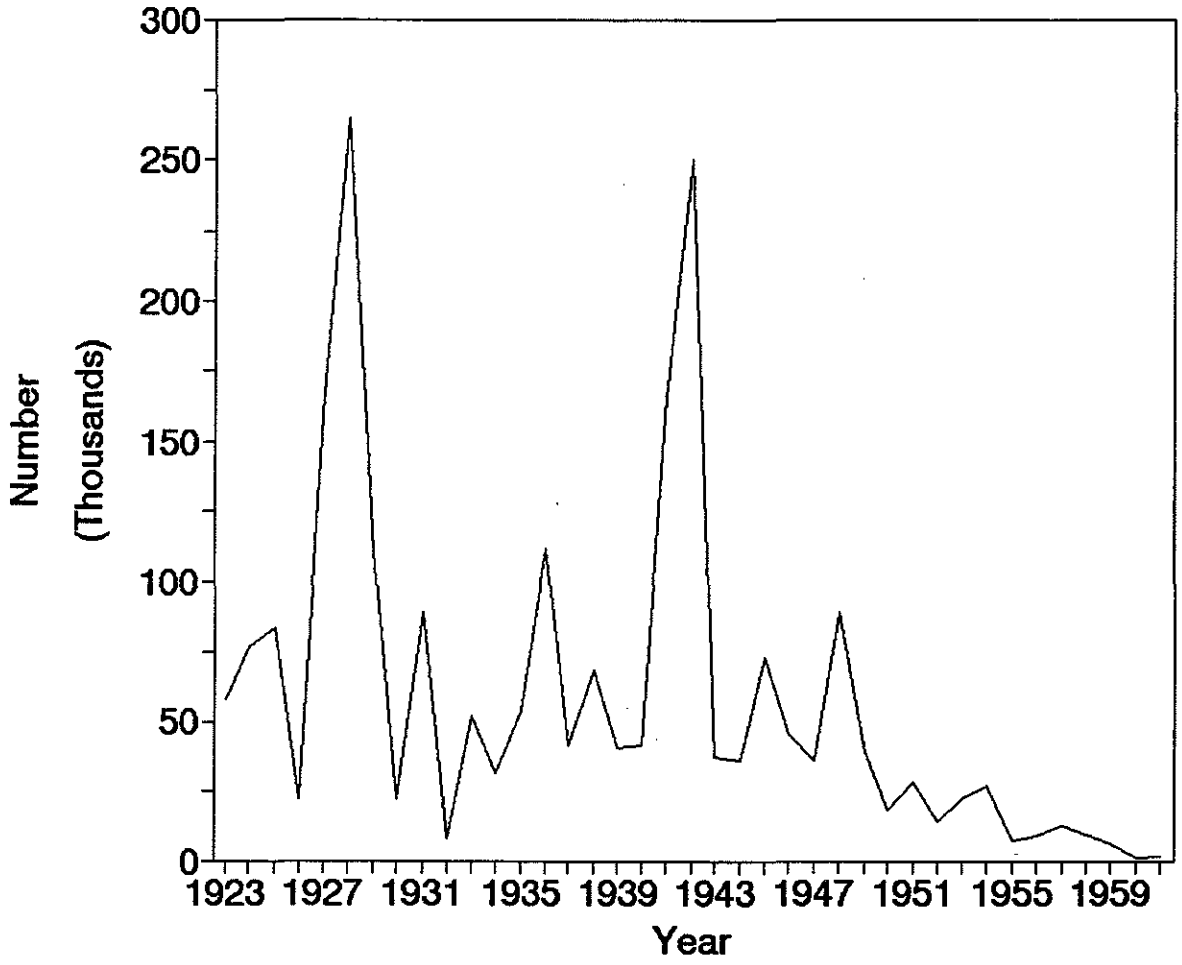

Figure 17. Annual landings of chum salmon in numbers from the Tillamook Bay commercial fishery, 1923-61. Data from Cleaver (1951) and Oakley (1962).

Table 6. Stock size estimates of chum salmon in Tillamook Bay, 1948-91.

Year	Peak count (fish/mile)	Estimated[a] catch	Estimated spawners	Estimated stock size
1948	696	89,320	130,139	219,459
1949	1,329	39,190	57,100	96,290
1950	511	18,200	26,517	44,717
1951	1,003	28,310	41,248	69,558
1952	436	14,390	20,966	35,356
1953	759	22,120	32,188	54,308
1954	850	26,990	39,324	66,314
1955	195	7,130	10,388	17,518
1956	191	9,330	13,594	22,924
1957	361	12,670	18,460	31,130
1958	324	9,930	14,468	24,398
1959	154	6,180	9,004	15,184
1960	76	1,150	1,676	2,826
1961	101	1,560	2,273	3,833
1962	500	--	--	22,120
1963	348	--	--	15,396
1964	362	--	--	16,015
1965	147	--	--	6,503
1966	124	--	--	5,486
1967	170	--	--	7,521
1968	185	--	--	8,184
1969	272	214	12,033	12,247
1970	465	257	20,572	20,829
1971	324	584	14,334	14,918
1972	505	275	22,341	22,616
1973	802	340	35,480	35,820
1974	780	645	34,507	35,152
1975	747	457	33,047	33,504
1976	267	2,102	11,812	13,914
1977	579	1,671	25,615	27,286
1978	949	3,770	41,984	45,754
1979	74	1,939	3,274	5,213
1980	315	4,181	13,936	18,117
1981	171	3,692	7,565	11,257
1982	640	10,723	28,314	39,037
1983	462	4,041	20,439	24,480
1984	367	4,652	16,236	20,888
1985	143	4,420	6,326	10,746
1986	188	1,894	8,317	10,211
1987	328	6,511	14,511	21,022
1988	865	3,549	38,268	41,817
1989	181	595	8,007	8,602
1990	102	957	4,512	5,469
1991	350	1,782	15,484	17,266

[a] *Commercial catch (1948-61) and recreational catch (1969-1991).*

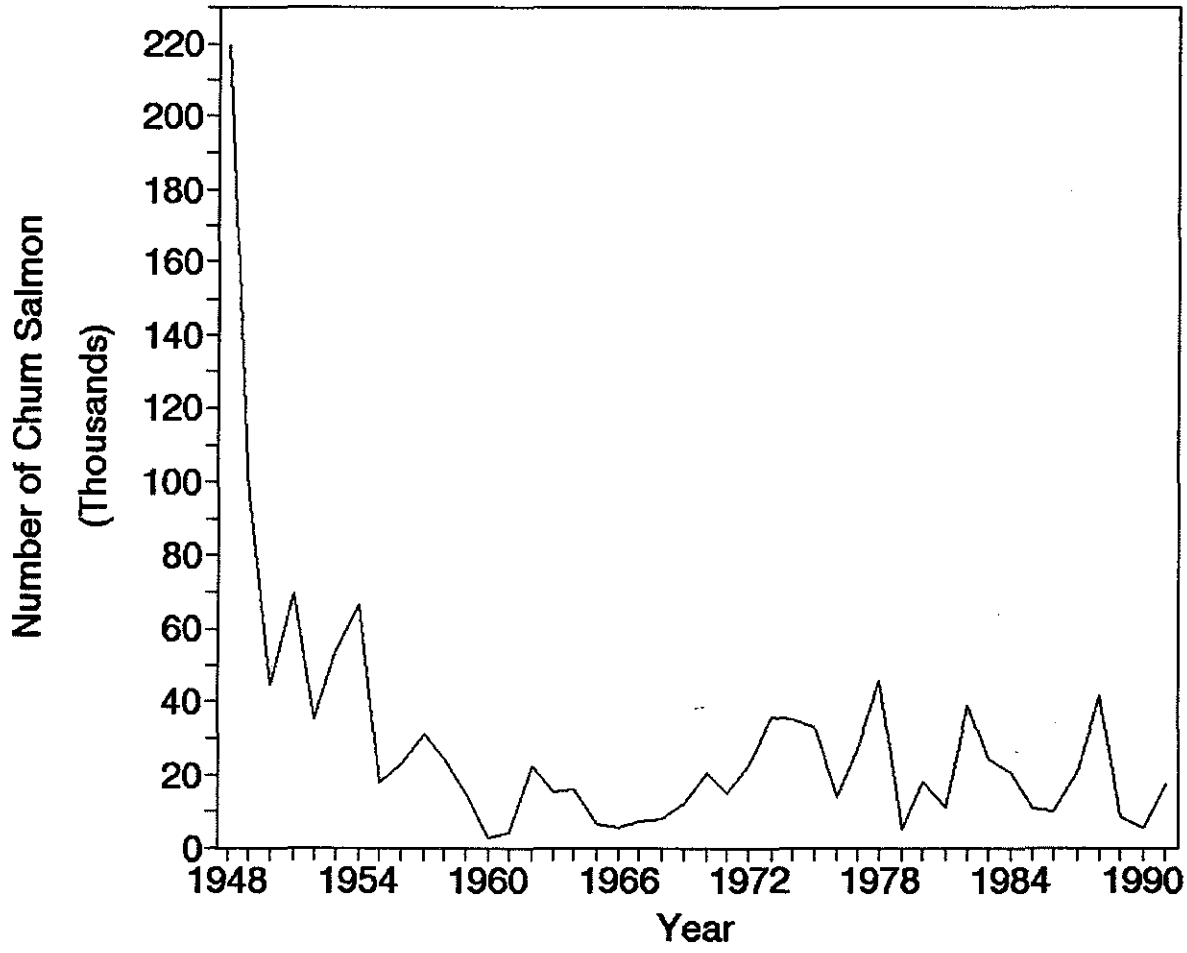

Figure 18. Trend in the estimated population abundance of chum salmon in Tillamook bay, 1948-91.

Table 7. Recruitment of chum salmon in Tillamook Bay by brood year.

Brood year	Spawners	Age composition of recruits			Total recruits
		Age 3	Age 4	Age 5	
1956	13,594	7,774	870	23	8,667
1957	18,460	1,927	613	66	2,606
1958	14,468	3,197	3,893	0	7,090
1959	9,004	18,161	11,085	96	29,342
1960	1,676	4,311	2,210	0	6,521
1961	2,273	13,693	3,440	0	17,133
1962	22,120	3,063	3,933	113	7,109
1963	15,396	1,553	4,919	0	6,472
1964	16,015	2,489	2,643	0	5,132
1965	6,503	5,541	4,654	0	10,195
1966	5,486	7,593	19,184	194	26,971
1967	7,521	1,645	7,011	475	9,131
1968	8,184	7,698	15,085	2,042	24,825
1969	12,033	7,056	23,605	211	30,872
1970	20,572	10,173	22,743	972	33,888
1971	14,334	12,198	13,301	97	25,596
1972	22,341	19,231	9,949	355[a]	29,535
1979	3,274	7,964	9,547	272[a]	17,783
1986	8,317	680	4,118	777	5,575

[a] *Calculated from the average age composition of the chum salmon run (1.3% age 5).*

Table 8. Number of chum salmon trapped in Whiskey Creek, Netarts Bay, 1969-91. Data from Berry (1974) and Tillamook District, ODFW, files.

Year	Number trapped	Year	Number trapped
1969	400	1981	2,879
1970	1,200	1982	6,646
1971	500	1983	2,569
1972	1,300	1984	791
1973	1,500	1985	1,238
1974	3,012	1986	686
1975	800	1987	834
1976	707	1988	2,343
1977	1,506	1989	266
1978	1,724	1990	333
1979	548	1991	---[a]
1980	6,878		

[a] *Trap was not operated in 1991.*

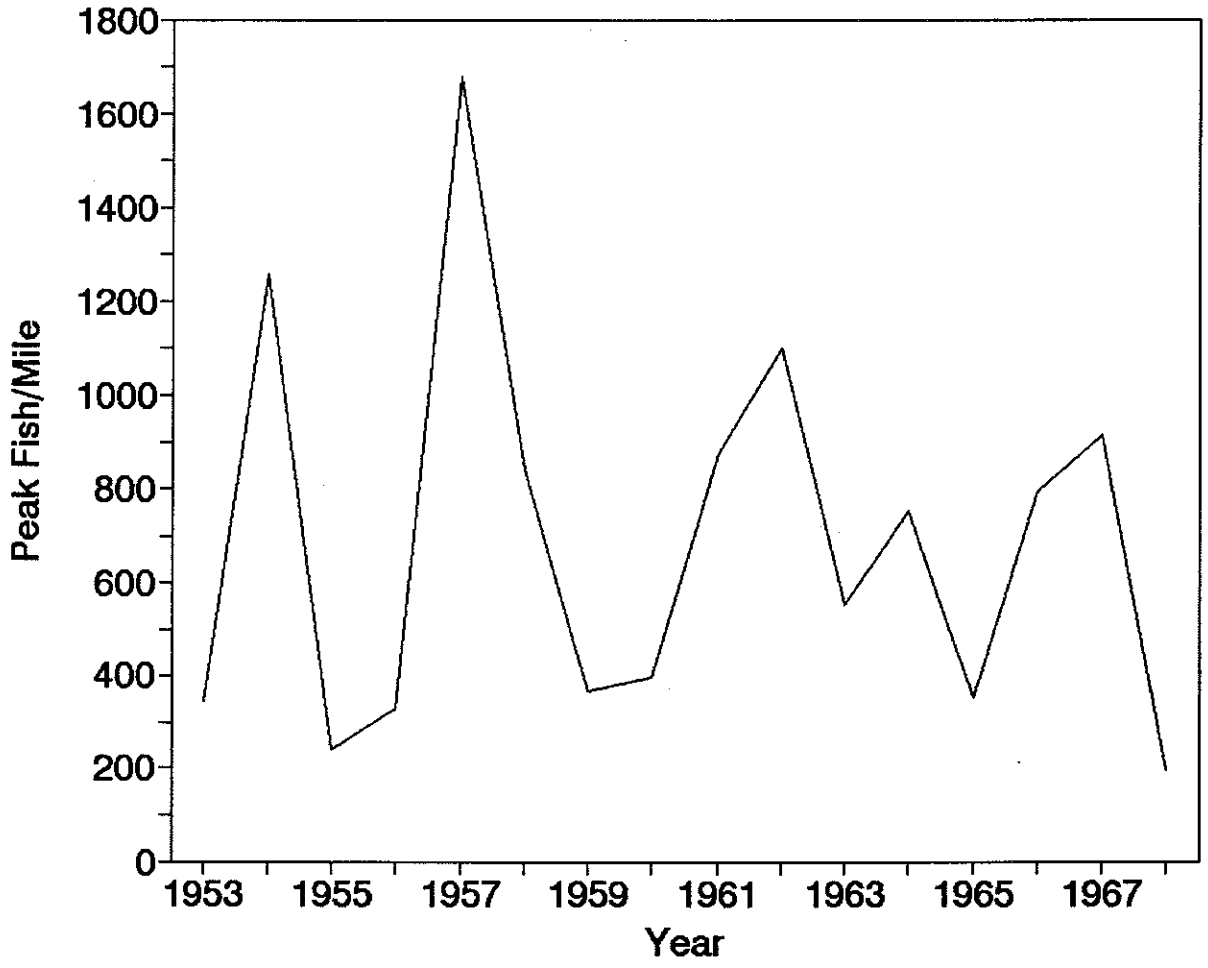

Figure 19. Peak count of chum salmon (fish/mile) spawning in Whiskey Creek, Netarts Bay, 1953-68.

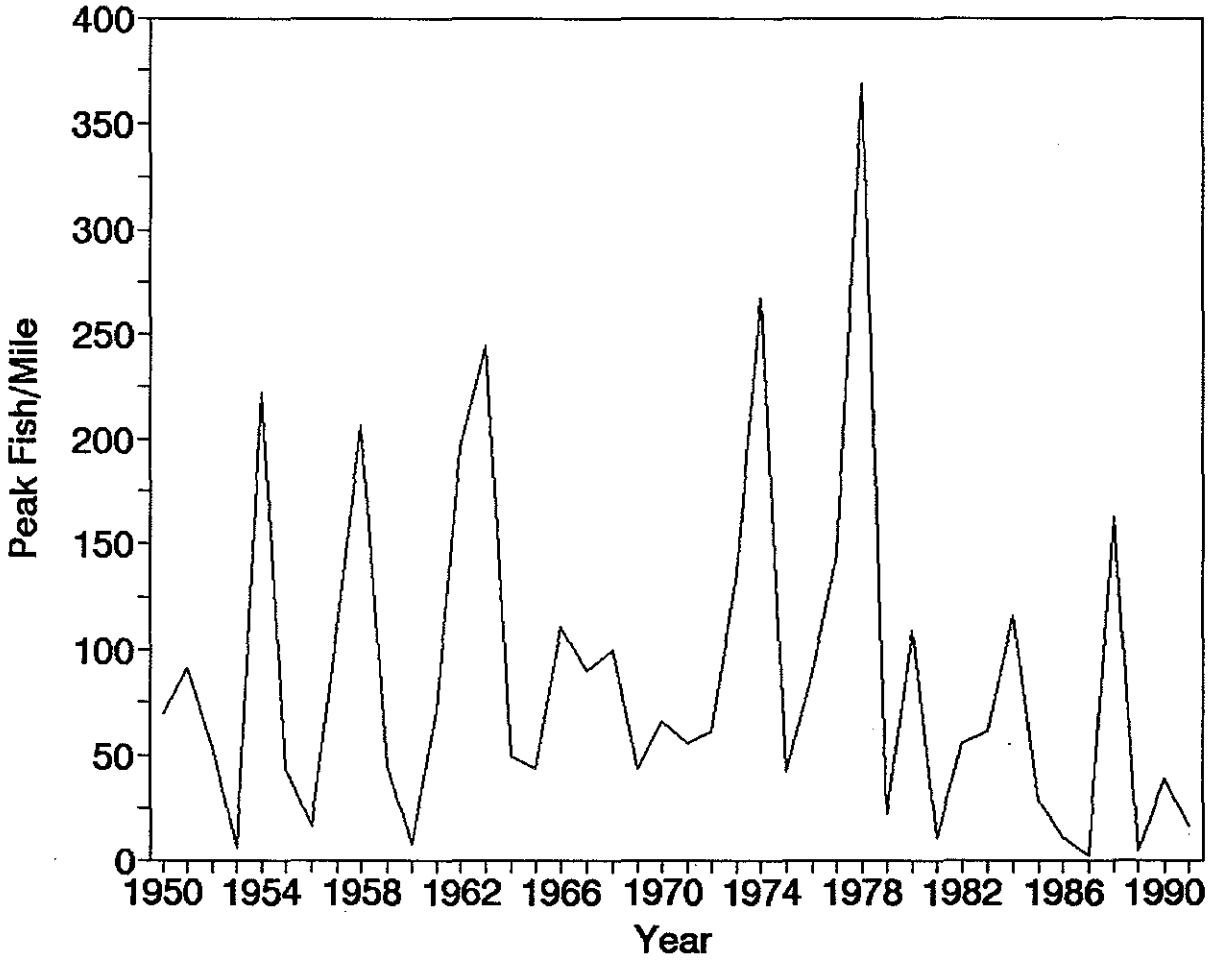

Figure 20. Peak count of chum salmon (fish/mile) spawning in Clear Creek, Nestucca River, 1950-91.

Table 9. Provisional status of wild chum salmon populations in Oregon coastal basins.

Population	Status[a]	Comments
Necanicum R.	Unknown	
Nehalem R.		
Lower Nehalem R.	Healthy	Hatchery strays
North Fork Nehalem R.	Healthy	
Tillamook Bay		
3 Small Tillamook Bay Tribs.	Unknown	May not be valid populations
Miami R.	Healthy	
Kilchis R.	Healthy	
Wilson R.	Healthy	
Trask R.	Healthy	
Tillamook R.	Healthy	
Netarts Bay (2 populations)	Healthy	
Sand Cr.	Special concern	
Nestucca R.	Healthy	
Little Nestucca R.	Special concern	
Neskowin Cr.	Special concern	
Salmon R.	Special concern	
Siletz R.	Special concern	
Drift Cr. (Siletz)	Special concern	
Yaquina R.	Healthy	
Alsea R.	Special concern	
Yachats R.	Special concern	May not be valid population
Umpqua R.		
Lower Umpqua R. and Smith R.	Special concern	May not be valid population
Coos R.	Special concern	May not be valid population
Coquille R.	Special concern	May not be valid population

[a] *Status is based on criteria in* **APPENDIX A.**

STEELHEAD
Oncorhynchus mykiss

Historically, steelhead were abundant in Oregon's coastal rivers and in the Columbia Basin. Steelhead currently support popular sport fisheries and contribute millions of dollars annually to Oregon's economy through various businesses that serve recreational anglers. For many people, steelhead and steelhead fisheries were and continue to be an important part of the tradition of living in the Pacific Northwest. Just as importantly, the future health of our environment is essential to the persistence of wild populations of steelhead.

Description

Steelhead are rainbow trout that migrate as juveniles to the ocean to rear and then migrate back as adults to fresh water to spawn. They differ from salmon in that the anal fin has only 8-12 rays compared with 13 or more for salmon. Steelhead have small, irregular black spots on the back and on the dorsal and tail fins. Juveniles have 5-10 widely spaced, short, dark oval parr marks. Juveniles can be distinguished from cutthroat trout by the lack of a red slash under the jaw and by the lack of small teeth on the floor of the mouth between the gill arches. However, small rainbow and cutthroat juveniles are difficult to distinguish from one another. Unlike salmon, steelhead can spawn more than once but the number that actually survive to do so is small.

Distribution

The original geographic range of steelhead in North America was restricted to the Pacific Ocean and coastal drainages extending from the Kenai Peninsula of Alaska to the northern Baja Peninsula of Mexico (MacCrimmon 1971; Sheppard 1972). In California, steelhead fisheries extend to the Big Sur, Carmel, and San Lorenzo rivers south of San Francisco. Steelhead populations from Oregon stocks have been introduced into the Great Lakes and Chile.

In Oregon, winter steelhead are found in virtually all coastal streams. Summer steelhead are native to the Rogue, Umpqua, Siletz, and Columbia rivers with introduced hatchery runs in Tillamook Bay streams, and the Nestucca River (Figure 1). ODFW has provisionally identified 81 populations of winter steelhead and six populations of summer steelhead on the Oregon Coast.

Life History

Steelhead are the sea-run form of rainbow trout. In some streams such as the Deschutes River, resident and migratory forms exist together. Steelhead are characterized by a spring migration of juveniles to the sea and a physiological transformation which adapts them to salt water.

Winter and summer steelhead are separated by the time of year adults migrate into fresh water to spawn. Winter steelhead enter streams beginning in November with the majority returning in January through March. Sexual

maturation is completed during migration, and spawning occurs shortly thereafter during January through May. In contrast, summer steelhead enter fresh water from late spring through summer and do not mature and spawn until January through May of the following year.

Most steelhead spend from 1 to 3 years in salt water before returning as adults to fresh water to spawn. However, steelhead life-history is highly variable. Wild fish may rear in fresh water from 1-4 years and in the ocean from a few months to 4 years. The result is 16 possible combinations of freshwater and saltwater ages in first-spawning adults (Figure 21).

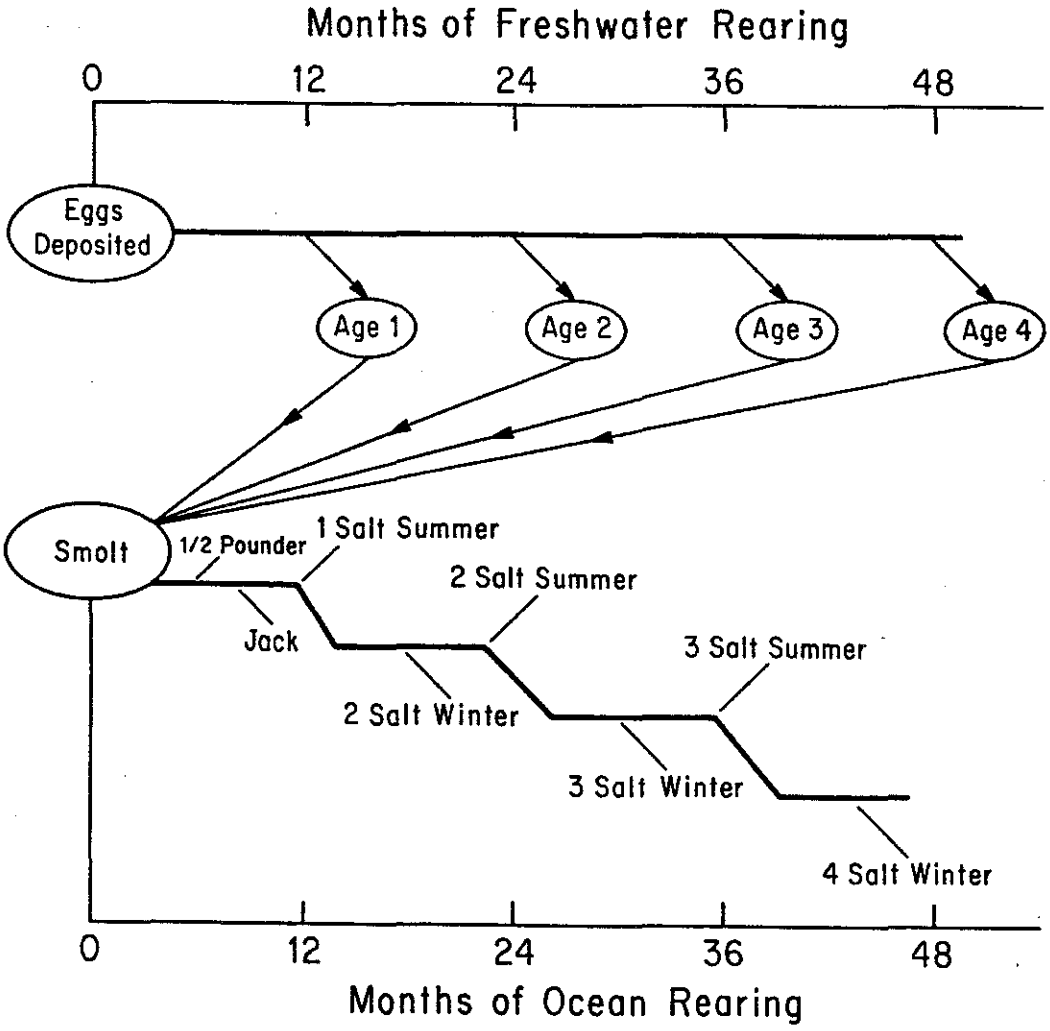

Figure 21. Life history of steelhead from egg deposition until their first return to the river.

The most striking difference between steelhead and salmon is that steelhead do not always die after spawning. However, the percentage of fish that has spawned in previous years is small ranging from 3-20% of runs in Oregon coastal streams and in lower Columbia tributaries, to near zero in mid-

and upper-Columbia tributaries. Usually only females survive to spawn more than once.

Females dig redds and deposit eggs in the gravel. Eggs hatch in 35-50 days depending upon water temperature. Alevins remain in the gravel 2-3 weeks until their yolk sac is absorbed and then emerge as fry and actively feed. Most juveniles rear 2-3 years in the stream before migrating to the ocean in spring as 6-8 inch smolts.

Smolts grow rapidly in the ocean, reaching 16-20 inches by fall. A small proportion of winter steelhead, mostly males, reach sexual maturity in their first winter and return to spawn as jacks. Immature "half-pounders" enter the Rogue River at a size of 11-16 inches after only 3-4 months in the ocean. After spending about 8 months in fresh water without spawning, half-pounders return to the ocean to complete rearing. Similar half-pounder runs exist only in the Klamath and Eel rivers of northern California.

Information on migration patterns and distribution of steelhead in the Pacific Ocean is limited, however it is possible to piece together a general picture of ocean distribution (Figure 22). Based on purse seine catch, juvenile steelhead tend to migrate directly offshore during their first summer from whatever point they enter the ocean rather than migrating along the coastal belt as do salmon. During fall and winter, juveniles move southward and eastward (Hartt and Dell 1986). Steelhead have a widespread distribution throughout the Gulf of Alaska and the Aleutian Island area (Hartt and Dell 1986). Steelhead are distributed in the north central Pacific off the tip of the Aleutian chain as far west as longitude 168°E and south to latitude 41°S. No steelhead have been found in the Bering Sea (Hartt and Dell 1986). Distribution of steelhead from British Columbia, Washington, Oregon, and Idaho tends to overlap in the ocean.

Habitat Requirements

Spawning and initial rearing of juvenile steelhead generally take place in small moderate-gradient (generally 3-5%) tributary streams. Steelhead require clean pea to orange size gravel for spawning and cool water temperatures (45-58°F) for rearing (Reiser and Bjornn 1979). Fry emerge in late spring and occupy the stream margins. Summer rearing takes place primarily in the faster parts of pools although young-of-the-year are abundant in glides and riffles. Winter rearing occurs more uniformly at lower densities across a wide range of fast and slow habitat types. Productive steelhead habitat is characterized by complexity, primarily in the form of large and small wood. As juveniles get older, some tend to move downstream to rear in larger tributaries and mainstem rivers. Summer steelhead in the Rogue River move into the mainstem soon after emergence because the streams in which they spawn go dry by early summer.

An additional requirement of summer steelhead habitat is the presence of adequate cool, deep holding pools for adults during summer and fall prior to spawning.

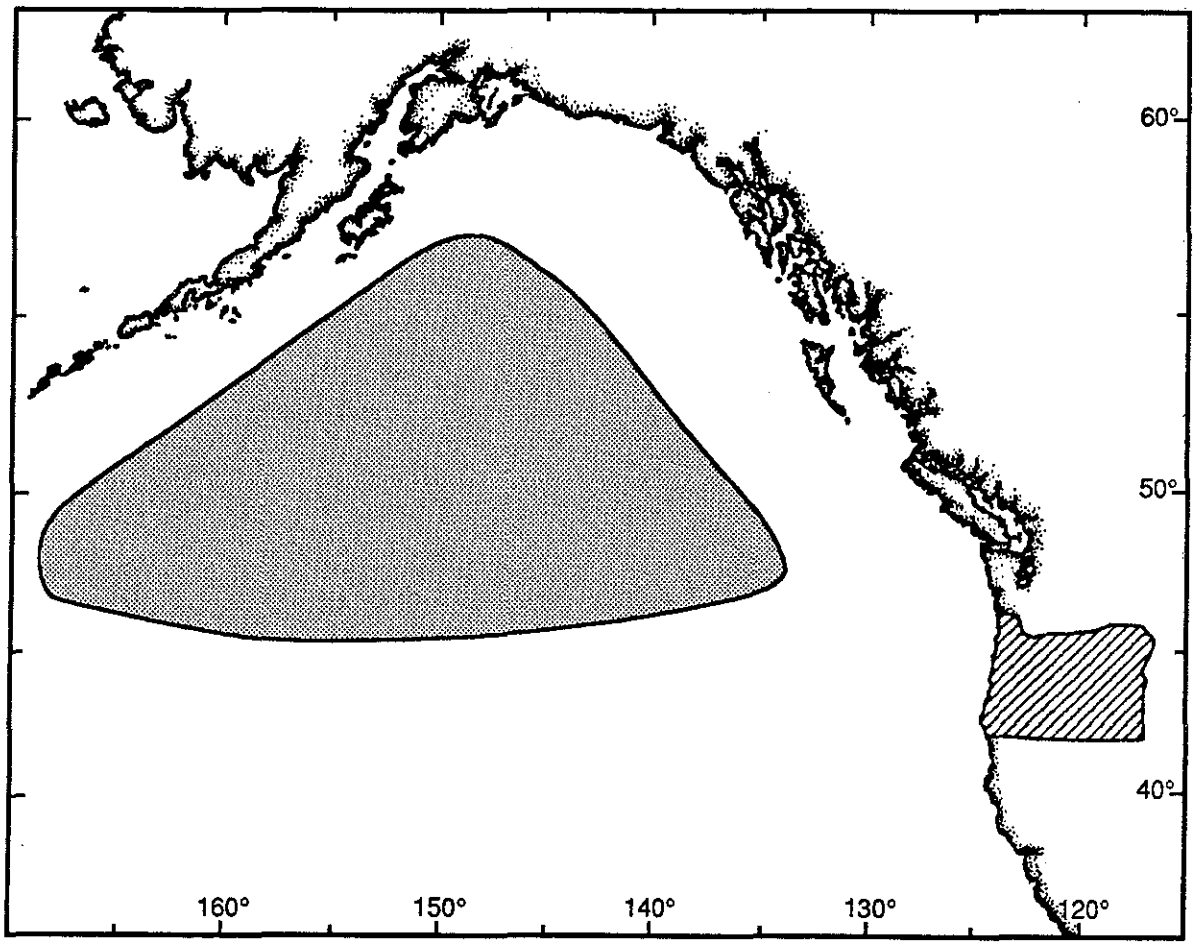

Figure 22. Presumed predominant range in oceanic waters of steelhead from Oregon coastal streams.

Hatchery Production

Steelhead are propagated at 8 public hatcheries in Oregon coastal basins. Steelhead production in all these hatcheries is funded 100% by State dollars except Cole M. Rivers Hatchery in the Rogue Basin which is funded by the U.S. Army Corps of Engineers as mitigation for Rogue Basin dams. Releases of smolts from public hatcheries on the coast averaged about 1.7 million winter steelhead and 0.5 million summer steelhead during 1987-91. Whereas winter steelhead smolts produced from coastal hatcheries are released in almost every major coastal basin, summer steelhead smolts are released only in the Kilchis, Wilson, Nestucca, Siletz, Umpqua, and Rogue basins. STEP projects also release varying numbers of hatch-box fry annually in a variety of locations.

Fisheries

Steelhead support popular sport fisheries in Oregon. Steelhead were declared a gamefish in Oregon in 1975 and all commercial harvest was eliminated. In the last 20 years, the estimated sport harvest in Oregon coastal streams, by run year, has ranged from 54,000 in 1982-83, an El Niño year, to 144,700 in 1974-75. The majority of the sport catch is winter steelhead. In addition to adult steelhead, thousands of half-pounder steelhead are also caught annually in the Rogue River. Most steelhead fisheries in Oregon are now supported by hatchery fish. Catch prior to 1950 was primarily wild fish. The marking of all hatchery fish in the state and catch-and-release regulations on unmarked fish in some streams is being used to help insure adequate spawning escapements of wild fish.

Status of Populations

Steelhead populations vary in abundance from year to year for many reasons. Variations result from changes in the physical environment, interactions with other populations of the same or of a different species, and from density effects within the population itself. The difficult challenge for biologists is to separate natural changes in abundance from those that are a direct or indirect result of man's activities. As a starting point, long term data sets are useful for assessing status.

The current status of coastal steelhead populations was assessed relative to a mean index of abundance for a 20 year period from 1971 through 1990. The mean was used as a point of reference because there are no escapement or other numerical goals that have been established universally for steelhead in Oregon as is the case with coho salmon. The reader should keep in mind that this reference point might change considerably if a different time series was used.

Angler catch estimated from salmon-steelhead tags was used as an index of abundance in most coastal streams because no other long-term indices or direct counts were available. The exceptions were the Rogue and North Umpqua rivers where counts at Gold Ray and at Winchester dams were used. Estimates from steelhead tags are thought to be most reliable since 1971.

Steelhead catch estimates were validated as an index of abundance by comparing catch estimates based on steelhead tags in the North Umpqua and Rogue rivers with counts at Winchester and Gold Ray dams (Cramer et al. 1985; ODFW 1990). In addition, steelhead tag estimates in Alsea River were compared with hatchery returns to Alsea Hatchery. Based on a statistical analysis, trends in catch estimates were similar to those of dam counts and to those of hatchery returns in these three rivers. However, the relationships were highly variable reflecting effects of factors other than steelhead abundance on the success and participation of anglers.

Not all populations of steelhead identified by ODFW on the coast were included in this summary. Only streams where annual catch exceeded 200-300 fish or where populations were needed to better represent a geographic area were used in this assessment.

Hatchery fish are not segregated from wild fish in catch estimates. However, the number of hatchery steelhead released as smolts has generally remained constant since the mid 1970s. Consequently, fluctuations in abundance in the last 15 years in streams where hatchery fish are released should not be a result of changes in numbers released.

Current status of steelhead in selected streams is shown in Tables 10 and 11 as the number of years in the last 10 years, in the last 5 years, and in the last 3 years that catch was below the 1971-90, 20 year mean. If abundance was evenly and randomly distributed about the mean through time, then 5 years in the last 10 year period might normally be expected to fall below the mean. The total annual catch for all streams combined over this 20 year period is shown in Figure 23. The status of each population was also assessed based upon the criteria presented in **APPENDIX A.** Five winter steelhead populations were classified as healthy and 19 were classified as depressed (Table 12). One summer steelhead population was classified as healthy and 2 were classified as depressed (Table 12).

The fact that many steelhead populations over a broad geographic range show similar trends in abundance and the almost universal positive response of populations to the effect of the 1982-83 El Niño event on smolt survival suggests that ocean conditions play a major role in determining annual abundance of steelhead. In addition, a statistically significant correlation between survival rates of Alsea Hatchery releases and catch in a stream with only wild fish (Trask River) further suggests that factors influencing year to year variation in abundance are not occurring in fresh water. Conversely, trends in abundance exhibited by some populations differ from the more general pattern also over a broad geographic area. This indicates that other factors such as freshwater habitat, stock differences, or local weather that influences angler catch, is effecting abundance or our perception of abundance in some streams or in some years. Although variation in ocean conditions appears to be an important factor influencing year to year variation in abundance, decreases in the quality of freshwater habitat over the last century has undoubtedly decreased current production of wild steelhead coastwide in Oregon.

Only two populations of winter steelhead and two populations of summer steelhead on the Oregon coast have been identified (Chilcote et al. 1992) that are considered in compliance with standards of abundance and hatchery influence of the ODFW Wild Fish Management Policy.

Table 10. Status of selected coastal winter steelhead populations for three time periods expressed as the number of years that catch was below the 20 year (1971-90) mean catch. Double asterisks indicate a declining trend over the 20 year period. "W" denotes streams where no hatchery fish are stocked.

Stream	Number of years runs were below average		
	1981-90 (10 yr)	1985-90 (5 yr)	1988-90 (3 yr)
Necanicum	7	3	3
Nehalem	7	4	3
Salmonberry (W)	8	4	3
Miami	8	5	3
Kilchis	9	5	3
Wilson **	10	5	3
Trask (W)**	9	5	3
Nestucca	8	5	3
Salmon	9	5	3
Siletz	8	5	3
Alsea	8	5	3
Yachats (W)	7	4	3
Tenmile (W)** (Lane Co.)	10	5	3
Siuslaw	9	5	3
N. Umpqua[a] (W)	6	1	1
Smith	6	4	3
Coos	8	5	3
Coquille	7	3	1
Sixes (W)	9	5	3
Rogue[a]	5	1	1
Illinois (W)**	9	5	3
Pistol (W)	8	4	2
Chetco	7	4	3
Winchuck (W)	7	3	3

[a] *Dam counts, 1971-1990 run years. Only counts of wild fish were included on the Rogue because the number of hatchery fish released increased substantially from the 1970s to the 1980s. Catch of all winter steelhead (hatchery and wild) in the Rogue was below average in 9 out of the last 10 years, 4 out the last 5 years and 2 out of the last 3 years.*

Table 11. Status of selected coastal summer steelhead populations for three time periods expressed as the number of years that catch was below the 20 year (1971-90) mean catch. Double asterisks indicate a declining trend over the 20 year period. "W" denotes streams where no hatchery fish are stocked.

Stream	Number of years runs were below average		
	1981-90 (10 yr)	1985-90 (5 yr)	1988-90 (3 yr)
Wilson	8	5	3
Nestucca	7	5	3
Siletz	6	5	3
N. Umpqua[a]	4	1	1
Rogue[b]	6	3	3

[a] *Dam counts, 1971-1990 run years. Counts were well below average in 1991 and 1992 on the N. Umpqua River.*

[b] *Based on seining data (adults and half-pounders combined) collected by ODFW in the lower Rogue from 1976 through 1991.*

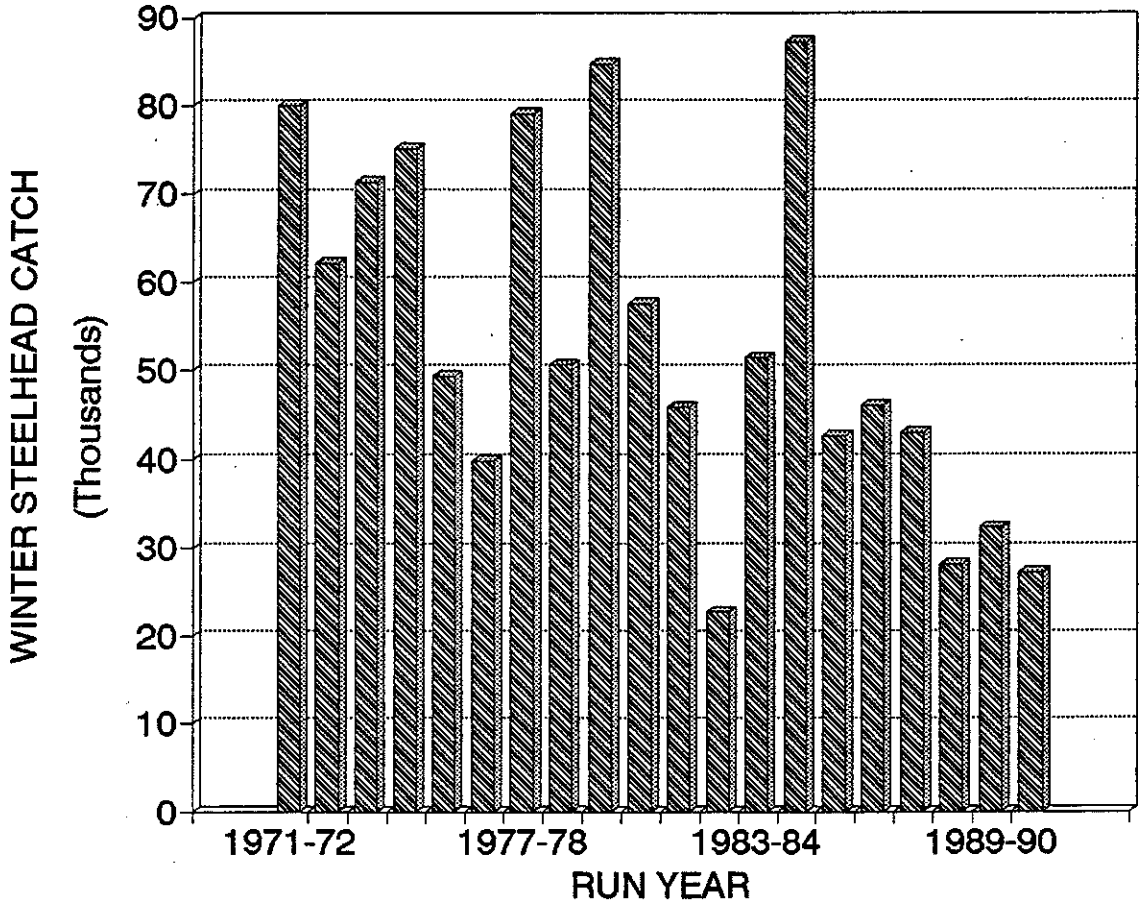

Figure 23. Annual catch of winter steelhead in all streams shown in Table 10 combined, 1971-90 run years. Rogue and Umpqua rivers were not included.

Table 12. Provisional status of wild steelhead populations in Oregon coastal basins.

Population	Status[a]	Comments
Winter Steelhead		
Necanicum R.	Special Concern	
Nehalem R.	Depressed	
Salmonberry R.	Depressed	
Tillamook Bay		
Miami R.	Depressed	
Kilchis R.	Depressed	
Wilson R.	Depressed	
Trask R.	Depressed	
Nestucca R.	Depressed	
Salmon R.	Depressed	
Siletz R.	Depressed	
Alsea R.	Depressed	
Yachats R.	Depressed	
Tenmile Cr. (Lane Co.)	Depressed	
Siuslaw R.	Depressed	
Umpqua R.		
Smith R.	Depressed	
North Fork Umpqua R.	Healthy	
Coos R.	Depressed	
Coquille R.	Healthy	
Sixes R.	Depressed	
Rogue R.	Healthy	
Illinois R.	Depressed	
Pistol R.	Depressed	
Chetco R.	Depressed	
Winchuck R.	Healthy	
Summer Steelhead		
Siletz R.	Depressed	
Umpqua R.		
North Fork Umpqua R.	Healthy	
Rogue R.	Depressed	

[a] *Status is based on criteria in* **APPENDIX A.**

COASTAL CUTTHROAT TROUT
Oncorhynchus clarki clarki

The coastal subspecies of cutthroat trout is widely distributed in western Oregon and exhibits an incredibly diverse array of life histories throughout its range. These reflect adaptations to diverse rearing environments and tend to segregate habitat use and minimize competition with other salmonid species. While the coastal subspecies is the most widely distributed and abundant of the many subspecies of cutthroat trout, many biologists believe their numbers have been experiencing widespread decline during the last two decades.

Description

As many as 16 different subspecies of cutthroat trout have been recognized in recent scientific articles (Allendorf and Leary 1988). The coastal cutthroat trout is distinguished from all other trout by the dense pattern of spots across the body. Small to medium spots with an irregular shape occur across the sides and ventral surface of the body, onto the head, and on the anal fin. Juveniles can be distinguished from steelhead by the presence of a red slash under the jaw and small teeth on the floor of the mouth between the gill arches. Differences in spotting pattern, life history, and the number of chromosomes are the most consistent characters for distinguishing the coastal from interior subspecies of cutthroat trout (Behnke 1979).

Coastal cutthroat trout usually do not develop the brilliant colors typical of many interior subspecies. Sea-run individuals often are silvery in color, and the characteristic spotting may be masked. Coastal cutthroat trout that remain in fresh water throughout their life usually are darker than sea-run (anadromous) individuals and may have a "coppery" coloration (Behnke 1979). Sea-run cutthroat trout in Oregon rarely exceed a length of 20 inches (51 centimeters) or a weight of 4 pounds (1.8 kilograms) (Giger 1972).

Distribution

Coastal cutthroat trout are distributed along the Pacific Coast from northern California's Eel River to Prince William Sound, Alaska (Gerstung 1981; Johnston 1981). In Oregon and Washington, coastal cutthroat trout extend to the crest of the Cascade Mountains and in British Columbia and Alaska to the crest of the Coast Range. They rarely occur inland more than 100 miles (160 kilometers). This geographical pattern corresponds closely to the distribution of the coastal rain forest belt in the Pacific Northwest (Trotter 1989). Sea-run cutthroat trout have occurred historically in most Oregon tributaries to the Pacific Ocean (Figure 1). ODFW has provisionally identified 92 populations of wild sea-run cutthroat trout on the Oregon Coast.

Life History

Life History Types

Coastal cutthroat trout exhibit diverse patterns in life history and migration behavior. Distinct populations of coastal cutthroat, for example, show marked differences in their preferred rearing environments (river, lake, estuary, or ocean); size and age at migration; timing of migrations; age at maturity; and frequency of repeat spawning. Four major life history patterns have been described for the subspecies (Trotter 1989):

(1) Anadromous or sea-run populations migrate to the ocean (or estuary) for usually less than a year before returning to fresh water. Anadromous cutthroat trout either spawn during the first winter or spring after their return or undergo a second ocean migration before maturing and spawning in fresh water.

(2) Fluvial populations are fish that undergo in-river migrations between small spawning tributaries and main river sections downstream similar to the ocean migrations of sea-run cutthroat trout. This pattern has been described in the Rogue River (Tomasson 1978).

(3) Adfluvial populations migrate between spawning tributaries and lakes. Migrations may involve inlet or outlet streams. Juveniles may spend from 1 to 3 years in tributaries before migrating into the lake.

(4) Nonmigratory (resident) forms of coastal cutthroat trout occur in small headwater streams and exhibit little instream movement. They generally are smaller, become sexually mature at a younger age, and may have a shorter life span than many migratory cutthroat trout populations.

Cutthroat trout populations within the same river system may exhibit multiple life history patterns. Genetic exchange between cutthroat trout of different life history types, for example, sea-run and resident forms, is poorly understood.

Migrations of Anadromous (Sea-run) Cutthroat Trout

Our ability to generalize about the life history of sea-run cutthroat trout is limited by the small number of descriptive surveys that have been conducted throughout their distributional range. Information on the timing of migrations of juvenile and adult sea-run populations in Oregon are based on angler surveys, fish counts across Winchester dam in the North Umpqua River, and trapping and inventory studies in a few coastal rivers (Sumner 1953, 1962, 1972; Lowry 1965; Giger 1972; Tomasson 1978).

Unlike species of Pacific salmon, sea-run cutthroat trout may spawn more than once. Available data suggest that most cutthroat trout return to fresh water in the same year that they migrate to sea (Giger 1972; Johnston 1981). Sea-run adults enter coastal estuaries on their spawning migration from late June through early October. These fish spend a variable amount of time in estuarine and tidewater areas before they move upstream. Time of spawning for individual populations in Oregon may range from December to May, but most

activity has been reported between December and February (Tomasson 1978). Spawned adults or "kelts" often return to salt water in late March or early April, but may remain in estuaries through the end of May (Giger 1972; Trotter 1989). Although sea-run cutthroat trout from many Oregon populations appear to spawn every year after they have reached maturity, a significant proportion of Rogue cutthroat trout do not (Tomasson 1978).

Relatively few female cutthroat trout become sexually mature before age 4. Limited information suggests that most cutthroat trout from Oregon coastal streams are mature following their first return from the ocean to fresh water (Sumner 1953; Giger 1972). However, a significantly higher proportion of some Columbia River populations may remain sexually immature after their first year of return (Trotter 1989).

Eggs of sea-run cutthroat trout incubate in the gravel and alevins emerge March through June (Trotter 1989). Fish in small tributaries leave their streams of origin at about 1 year of age and may spend variable amounts of time in the main stem of rivers. Fish may move back into smaller tributaries during winter freshets (Sumner 1962; Lowry 1965; Trotter 1989).

Seaward migrations of immature cutthroat trout in several Oregon streams are documented to occur from January through mid-June with peak movements in April or May (Sumner 1962; Lowry 1965; Giger 1972; Tomasson 1978). Most cutthroat trout become "smolts" at age 2, 3, or 4 but first seaward migrations have been reported for fish as old as age 6 (Giger 1972; Moring and Lantz 1975).

Nonsmolting juveniles (parr) are among the last fish to move downstream in the spring. In the Alsea River, for example, the peak downstream migration of parr occurred in late May. Most of these were fish that were not destined to enter the ocean but continued to rear in the river for additional periods. Some parr may rear in the estuary in the summer and migrate upstream again in the fall. A small proportion of the cutthroat trout in coastal streams may never migrate to sea (Giger 1972).

Observed differences in the life history of sea-run cutthroat trout populations in Oregon may reflect adaptations to local river conditions. Kelt movement from the upper Alsea system, for example, has been documented to begin in December and peak in January or February, about a month prior to other Oregon coastal rivers for which we have data (Lowry 1965; Giger 1972). Sumner (1972) proposed that in Oregon coastal rivers with sizeable estuaries like the Nestucca, there may be two distinct runs of cutthroat trout--one in July that remains in the estuary and tidewater for an extended period and another run that enters the estuary with fall freshets in October or November and moves directly upriver. Giger (1972) reported that sea-run cutthroat trout entered several coastal rivers on the central coast in two or three major groups, one in mid to late July and another about a month later, but no strong runs occurred after mid-September. In the Alsea River, repeat spawning fish were found to enter the river earlier than fish that were making their first spawning migration (Giger 1972).

The size and age at which juvenile cutthroat trout become "smolts" also vary among populations and probably represent inherited traits that reflect different rearing environments. For example, it is believed that most

cutthroat trout from the Columbia River rear in the estuary rather than the ocean and make their first migration at age 2 or 3 and at a mean size near 6 inches (16 cm) (Johnston 1981). Cutthroat trout in many streams on the central Oregon coast, however, tend to migrate at a larger mean size (about 8.3 inches or 21 cm) and older age (age 3 through 5) (Johnston 1981; Trotter 1989). A study of cutthroat trout in the Rogue River found that they did not migrate outside the estuary and that three-quarters of the first-time migrants were age 2 (Tomasson 1978).

Migrating cutthroat trout appear to form schools in the estuary before and after ocean migration (Giger 1972). Although Giger (1972) speculated that these schools remain intact in the ocean, transects made with purse seines off the Oregon coast showed no evidence of ocean schooling in the areas sampled (Pearcy et al. 1990).

Because sea-run cutthroat trout spend only a few months at sea, it has been assumed that most remain close to shore in the vicinity of their river of origin (Figure 24; Giger 1972). However, ocean surveys have indicated that at least some cutthroat trout move considerable distances offshore and along the

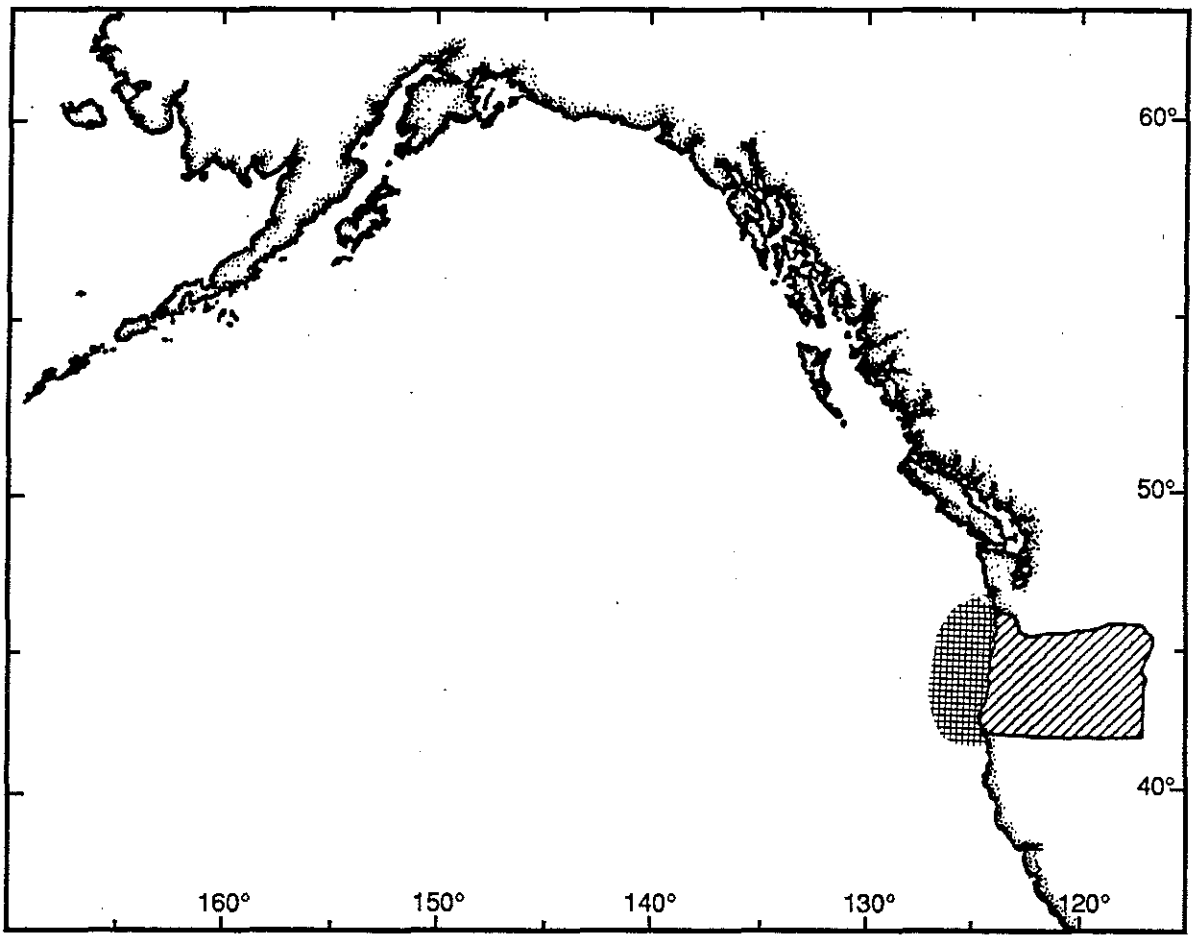

Figure 24. Presumed predominant range in oceanic waters of searun cutthroat trout from Oregon coastal streams.

coast. Although distribution varied between years during a 5-year ocean survey, cutthroat trout often were most abundant in a broad region from 5.8 to 17.2 miles (9.4 to 27.8 kilometers) offshore. At least some cutthroat trout moved as far as 155 miles (250 kilometers) alongshore and from 23 to 28.5 miles (37 to 46 kilometers) offshore. Highest mean catches during purse seine surveys had an average sea-surface temperature of 56°F (13.4°C) and a relatively low surface salinity (28.6 parts per thousand) which indicated the influence of fresh water, often within the Columbia River plume (Pearcy et al. 1990).

Habitat Requirements

Sea-run cutthroat trout tend to spawn in very small (first and second order) tributaries. Young fry move into channel margins and backwater habitats during the first several weeks. During the winter, juvenile cutthroat trout use low velocity pools and side channels with complex habitat created by large wood (Trotter 1989; ODFW, unpublished data).

Habitat use by juvenile cutthroat trout is affected by interactions with other salmonids. While juveniles prefer to rear in pools, young-of-the-year cutthroat trout may be displaced into low gradient riffles by dominant coho salmon (Glova and Mason 1977; Glova 1987). The selection of small tributaries for spawning and early rearing may help to reduce competitive interactions between cutthroat and steelhead or coho salmon. Differential selection of spawning habitat also may help to minimize hybridization with steelhead (Johnston 1981). The effects of interactions between cutthroat trout and other species are poorly understood. The risk of competitive exclusion of cutthroat trout from preferred rearing habitats by dominant coho salmon (Glova 1984; 1986; 1987) and steelhead (Hartman and Gill 1968) has important implications for salmonid stocking programs in coastal streams.

Very little is known about the habitat requirements and preferences of sea-run cutthroat trout in estuarine environments. Juvenile and adult cutthroat trout spend considerable time in tidal rivers and low-gradient estuarine sloughs and tributaries during spawning and feeding migrations. Large wood likely is an important habitat component for cutthroat trout during their estuarine residence.

Hatchery Production

Hatchery production of coastal cutthroat trout has ranged between 200,000 and 300,000 smolts for most of the last 15 years. The vast majority of the hatchery production is from a single stock of fish from the Alsea River. Today, the Alsea River stock of cutthroat trout is reared at ODFW's Alsea River and Cedar Creek hatcheries. These are presently released in ten different coastal rivers from the Necanicum River on the north coast to Smith River (Umpqua River Basin) to the south. A small group of coastal cutthroat trout has been collected in an effort to develop a native broodstock for the Nehalem River.

Fisheries

Sport fisheries for sea-run cutthroat trout are popular in a number of Oregon rivers. These occur primarily in the central and upper tidewater reaches of coastal streams. Anadromous cutthroat trout may be caught at any stage of their life cycle. Hatchery and wild stocks are caught during their outmigration in the spring beginning in late May. Wild cutthroat trout in these fisheries include both juveniles and kelts. Fall fisheries on central coastal streams often begin in mid-July and peak in August or September. Catches of wild fish in the fall include first and repeat-spawning adults and juvenile and adult resident fish (Giger 1972).

Harvest by spring and fall sport fisheries may influence the age structure of spawning cutthroat trout in some streams. For example, among heavily fished Alsea River populations, survival from first to second spawning was estimated to be less than 14%. In Sand Creek (Sand Lake basin) and the Umpqua River, where fishing pressure was relatively light, an estimated 39% and 26% of the cutthroat trout populations, respectively, returned to spawn a second time (Sumner 1962; Giger 1972).

Status of Populations

We do not have consistent indicators of trends in abundance for most populations of sea-run cutthroat trout. However, anecdotal information, creel surveys, and fish counts at dams have raised concerns that sea-run populations in Oregon may be experiencing widespread decline. Nehlsen et al. (1991) listed sea-run cutthroat trout in western Oregon at moderate risk of extinction. Because populations in Oregon occur near the extreme southern edge of the range of the subspecies, they may be particularly vulnerable to climatic change, habitat loss, or the cumulative effects of these and other disturbances.

Wild populations of sea-run cutthroat trout have declined throughout the Umpqua River basin. A remnant run of wild cutthroat trout remains in the Smith River and possibly in small tributaries of the main Umpqua River. The Smith River is stocked with hatchery fish, and most fish returning to the lower river are of hatchery origin. Catch and survey data indicate that present run sizes in the Umpqua basin are substantially lower than historic levels. Fisheries in the South Umpqua and upper mainstem of the Umpqua River have been nearly non-existent in recent years (Loomis et al. 1991).

Annual counts of fish over Winchester Dam on the North Umpqua River provide the best long-term source of information that we have for any sea-run cutthroat trout population in Oregon. These data indicate a serious decline in that population. From 1946 to 1956, counts of sea-run cutthroat trout over Winchester dam averaged about 950 adult fish per year and ranged from 400 to 1,800. Anecdotal reports suggest that runs may have been significantly higher prior to this period (Loomis et al. 1991). By 1960, the wild run over Winchester dam had declined to less than 100 fish. A hatchery program was initiated and boosted the run of cutthroat trout to an average of 940 adult fish through 1976, when the stocking of smolts was discontinued. Hatchery fish comprised the major component of the run throughout the 1960-1976 period.

Wild populations, however, remained low and have exceeded a total count of 100 fish only twice since 1980. They are now considered near extinction. Habitat degradation and associated increases in water temperature in small tributary streams are considered important factors in the decline. Genetic effects of introduced hatchery stock from the Alsea River, low population sizes, and competition and predation by other species may limit recovery efforts. Recovery strategies are hampered by a lack of basic life history, genetic, and habitat information (Loomis et al. 1991).

Lack of inventory data precludes quantitative assessment of the status of most other sea-run populations in Oregon. Incidental information on cutthroat trout densities in coastal streams were collected during several research projects by ODFW (Nickelson et al. 1986, 1992a; Rodgers et al. 1992). An analysis of the data from these studies and from the results of all of the study streams combined detected no significant declining trend in central coast populations of cutthroat trout during the period 1980-1990 (memorandum 1 October 1991 from T. E. Nickelson, ODFW, Corvallis, Oregon). However, these data provide no information about longer-term trends, and it is believed that by 1980, populations may have already been much lower than historic levels due to habitat loss. We know from counts over Winchester dam, for example, that wild populations in the North Umpqua River already had declined to remnant levels well before 1980 (Loomis et al. 1991).

Only three populations of sea-run cutthroat trout on the Oregon coast have been identified (Chilcote et al. 1992) that are considered in compliance with standards of abundance and hatchery influence of the ODFW Wild Fish Management Policy.

FACTORS LIMITING ABUNDANCE OF ANADROMOUS SALMONIDS

A limiting factor can be viewed as any condition that creates a "bottleneck" that ultimately results in reduced abundance of a population (usually measured at the adult stage). Not all factors causing mortality are limiting to each population. For example, decreasing a factor causing mortality of fry may not increase adult abundance of a population where winter habitat strictly limits the number of smolts, regardless of how many fry survive early rearing. For anadromous salmonids, limiting factors can be divided into three categories: (1) abundance of spawners, (2) genetic characteristics of the spawning population, and (3) environmental factors that influence survival at some point in the life cycle.

Abundance of Spawners

The effects of spawner numbers on population abundance are relatively straight forward compared with the many possible limiting factors that can occur in the freshwater and marine environments. While it is true that salmonid populations typically respond to low density with increased survival, a spawner population that is below its optimum number will, all else being equal, always result in below optimum abundance of adults produced. However, the decrease in the resulting adult population tends to be less than the decrease in spawner number because of compensatory (increased) survival.

Genetic Characteristics of the Spawning Population

The genetic characteristics of the spawning population establish the range of productivity that the population may achieve in any given environment. Generally, wild salmonid populations are thought of as having achieved, through the process of natural selection over many generations, genetic characteristics that will confer optimum productivity in its native environment. Three mechanisms that may act individually or in concert to reduce the productivity of wild populations are: (1) interbreeding with hatchery fish, (2) harvest of fish with specific genetic composition, and (3) extremely low spawner abundance.

About 11 million juvenile hatchery salmonids are annually released into Oregon coastal streams. In some basins, and for some species, significant numbers of adults returning from these releases spawn naturally and may interbreed with their wild counterparts. It appears likely that the long-term consequences of such interbreeding has a negative influence on wild populations either by reducing fitness or by decreasing genetic diversity (Hershberger 1980; Allendorf and Ryman 1987; Altukhov and Salmenkova 1987; Leider et al. 1987; USFWS 1988). Genetic differences between wild fish and hatchery fish originating from the same population have been demonstrated in several studies, with the hatchery fish generally showing a reduction in genetic variation (Allendorf and Phelps 1980; Vuorinen 1984; Leary et al. 1985). Reproductive success of hatchery steelhead spawning naturally has been found to be less than that of wild steelhead (Chilcote et al. 1986). Similarly, juvenile steelhead from wild parents performed better under natural stream conditions than did the offspring of hatchery parents (Reisenbichler and McIntyre 1977). Evidence for loss of phenotypes or changes in genetic

structure of wild fish because of interbreeding with foreign hatchery fish has been presented by several authors (Behnke 1979; Allendorf et al. 1980; Busack et al. 1980; Campton and Johnston 1985; Currens 1987).

Genetic changes caused by selective factors are difficult to detect in natural populations. As a result there few examples of such changes have been documented. The best example of genetic selection is that of decreases in size of British Columbia coho salmon and pink salmon (*O. gorbuscha*) caused by of commercial troll and gill net fisheries selectively harvesting larger than average fish (Ricker et al. 1978; Ricker and Wickett 1980; Ricker 1981). Fisheries can also have the effect, which may or may not have a genetic basis, of reducing the average age at maturity (*i.e.* loss of older aged spawners) in species having multiple ages at maturity such as chinook and chum salmon (Ricker 1980, 1981).

A small spawning population usually results in inbreeding. Inbreeding occurs when members of a spawning pair are more closely related to each other than individuals chosen at random (Gall 1987), results in loss of genetic variation (Allendorf and Phelps 1980; Gall 1987) and in "a general loss of vigor and fertility" (Gall 1987). Loss of genetic variation because of inbreeding may accelerate the processes leading to extinction of a population (Nelson and Soulé 1987).

Environmental Factors Influencing Survival

Freshwater/Estuarine Environment

Many factors potentially limit production of salmonids in fresh water including lack of adequate spawning gravel, poor water quality such as warm summer water temperatures, lack of instream structural complexity to provide winter rearing habitat, and interactions with other species.

Much of the freshwater habitat of salmonids on the Oregon coast has been extensively affected by human activities. Historically complex streams (usually with large amounts of large wood and often with multiple channels) have been cleared of obstructions, diked and straightened resulting in the loss of habitat, particularly productive off-channel areas, and the simplification of other habitat (Sedell and Froggatt 1984; PFMC 1992). Activities responsible for this loss of habitat include agriculture, urbanization, timber harvest, and resulting programs to remove wood from streams channels (Sedell and Luchessa 1982; Resch et al. 1988; Hicks et al. 1991; House and Boehne 1987). Few streams contain complex habitats today. For example, stream habitat inventory data show that highly suitable winter habitat for coho salmon composes less than 2% of the total winter area of 14 Coast Range streams surveyed (Nickelson et al. 1992a).

There are widespread implications of decreased habitat complexity that influence production of salmonids in fresh water. For example, storage of gravel and organic matter (an important energy source for prey items) is reduced (Hicks et al. 1991) and gravel that is present is more mobile and less suitable for spawning. Complex habitat is particularly important to over-winter survival of salmonids (Nickelson et al. 1992b; Rodgers et al. In Press; Bustard and Narver 1975; Tschaplinski and Hartman 1983)). In addition, loss

of diversity in mainstem rivers and estuaries may make smolts more vulnerable to predators (for example: birds and seals).

During a long-term research program in the Alsea watershed (1959-1973), cutthroat trout populations were reduced by clearcut logging (with no buffer strips) on an experimental stream (Moring and Lantz 1975). Populations remained low 10 years after logging (Hall et al. 1987). A recent study has shown continued negative effects on cutthroat trout densities in the treatment (clearcut) stream 23 years after logging (Schwartz 1991). Initial reductions after treatment may have been caused by elevated temperatures from an open riparian canopy. However, long-term reductions appear to be the result of a significant decline in the amounts of large woody debris found in clearcut streams. The effects on cutthroat trout populations appear to have been synergistic: loss of cover associated with large wood may have reduced the ability of cutthroat trout to compete effectively for food in the presence of juvenile coho salmon (Schwartz 1991).

Some streams, particularly those with a history of splash-damming (Sedell and Luchessa 1982), now lack adequate spawning gravel. In other streams, gravels are unstable and scouring of salmonid redds is a problem (Nawa et al. 1992). Gravel removal operations, which routinely occur in some coastal basins, pose a threat to chum salmon in north coastal rivers because most of these operations mine prime spawning gravel in the lower reaches of rivers where the chum salmon spawn.

Decreases in water quality or quantity may also influence freshwater production. For example, interspecific competition between redside shiners (*Richardsonius balteatus*) and juvenile steelhead is influenced by water temperature with trout dominating at temperatures <68°F and redside shiners dominating at temperatures >68°F (Reeves et al. 1987). In Carnation Creek, British Columbia, increased water temperatures resulted in accelerated growth, earlier migration of juveniles, and, presumably, decreased survival of coho salmon to adults (Holtby 1988). Increased water temperature usually results from loss of shade, widening of the stream channel, or reduced water quantity during summer. Water diversions may result in reduced summer habitat that limit populations of salmonids in some streams.

Oregon estuaries have experienced substantial reduction in historical tidal slough, tidal swamp, and marsh habitats through filling, diking, and draining of shoreland areas for agricultural, municipal, and residential development (Hoffnagle and Olson 1974; Thomas 1983; Benner 1992). The effects, if any, of these losses on estuarine-dependent populations of anadromous salmonids have not been studied. However, the widespread use of hiding cover by cutthroat trout suggests that large amounts of wood material historically found in Oregon estuaries may have been an important habitat component for cutthroat trout during their estuarine residence. The source and supply of this wood has declined considerably in many Oregon estuaries in the last century or more (Goner et al. 1988; Benner 1992).

Migration barriers are also a problem in many basins. Potential habitat for anadromous salmonids is been blocked by log jams and by culverts. Culverts placed in lieu of bridges, may prevent the upstream migration of chum salmon spawners even though other species of salmonids may pass through with ease. Tide gates have been placed in many tributaries and sloughs in the

lower reaches of rivers. These tide gates may hinder or prevent access by chum salmon into spawning tributaries or juvenile salmonids, (*e.g.* coho salmon) into over-wintering habitat in sloughs.

Marine Environment

Compared with freshwater environments, understanding of the ecology of salmonids in the ocean environment is extremely scant. Few studies of salmonids have focused on the marine environment, and those that have (Hartt and Dell 1986; Pearcy and Fisher 1988), have primarily examined migration patterns.

Several analyses have demonstrated that the ocean has a significant effect on abundance of adult salmonids from year to year (Nickelson 1986; Holtby et al. 1990; Pearcy 1992). For example, we see steelhead runs along the coast that vary in abundance together: in good years many streams over a wide geographic area have good runs, in other years, all tend to have poor runs. We see a similar pattern within south-migrating and north-migrating chinook salmon stocks. Survival of coho salmon has been shown to be correlated with ocean upwelling (Gunsolus 1978; Scarnecchia 1981; Nickelson 1983; 1986), and temperature (Nickelson 1986 and unpublished data). Ocean warming from the climatic phenomenon known as El Niño has devastating effects on abundance of some species and populations and very positive effects on the abundance of others. For example, coho salmon survive poorly during El Niño, whereas, steelhead appear to survive very well. However, we do not understand how these processes affect population size.

Long term trends are also apparent in ocean environmental conditions that affect salmonid populations. For example, since the mid-1970s, ocean temperature has tended to warm (in addition to the effects of two El Niños). Chum salmon appear to thrive during periods of warming in the northern Pacific Ocean and decline during periods of falling ocean temperature (Salo 1991). Chinook salmon and steelhead from a number of populations also migrate to the north Pacific and are likely influenced by conditions there. In addition to a warming trend in temperature, upwelling has been weak every year since 1975, except for 1991.

Identification of Limiting factors

Although the marine environment exerts strong influence on production of anadromous salmonid populations, limitations in our understanding of how this occurs precludes constructive management intervention, especially for wild populations. That leaves the number of spawners, the genetic character of the spawners, and various elements of the freshwater and estuarine environment as potential limiting factors that can reasonably be addressed. The limiting factor should be identified before undertaking projects to increase the abundance of a wild salmonid population because limiting factors are not identical for all species in all streams. Such identification should follow a logical process of analysis in each basin, including looking at adult and juvenile abundance and habitat condition. Approaches currently available to help accomplish this are most sophisticated for coho salmon (Nickelson et al. In Press) and least sophisticated for chinook and chum salmon.

HISTORIC AND CONTEMPORARY PRODUCTION

Estimates of the production (catch plus spawning escapement) of salmon and trout in Oregon coastal river basins prior to the mid 1800s have not been made. One or more canneries was operating on most of the major coastal rivers by the turn of the century, and cannery operational records provide some basis for estimating the abundance of the salmon runs entering these rivers at that time. Such estimates require considerable interpretation of the historic record and the use of major computational assumptions about such parameters as the percent of each run harvested for canneries. Likewise, estimating contemporary production of salmon in coastal river basins requires considerable judgment in selecting mathematical parameters to develop computational models. Therefore, these estimates provide a way of making only general comparisons of the historic and contemporary production of salmon and trout from coastal river basins.

Estimates of historic and contemporary production of anadromous salmonids in coastal basins have been developed and discussed by Mullen (1981a, b), Kenaston (1987, 1989, unpublished data), Lichatowich (1989), Nicholas and Hankin (1989a), Lichatowich and Nicholas (In Press), and Steven Jacobs (unpublished data).

Chinook salmon

Production of chinook salmon in Oregon coastal river basins probably ranged from about 300 thousand to about 600 thousand adults annually around the turn of the century. The contemporary (1980-89) production of chinook salmon from Oregon coastal river basins is probably 200-300 thousand wild adults annually.

Coho salmon

Production of coho salmon in Oregon coastal river basins probably ranged from about 1.0-2.0 million adults annually at the turn of the century. Baased on recent findings (Jacobs and Cooney 1991), contemporary (1980-89) production of coho from this region is probably about 100 thousand wild adults annually. This estimate differs from estimates currently being used in PFMC harvest management and presented in Figure 4.

Chum salmon

Production of chum salmon in Tillamook Bay alone was probably about 130 thousand adults annually during the decade of 1930-39. Contemporary (1980-89) production of chum salmon in the Tillamook basin is probably about 21 thousand adults annually. There are many other coastal basins that now have only remnant runs of chum salmon after having experienced declines similar to the Tillamook Bay population.

Steelhead

Production of steelhead in nine Oregon coastal river basins (Coquille River north), was probably about 100 thousand adults annually during the decade of 1930-39. Contemporary (1980-89) production in these same basins is probably about 50 thousand wild adults annually.

Coastal Cutthroat Trout

Because there are not published landings of cutthroat trout from the net fisheries in coastal rivers, we are unable to reconstruct historic production levels.

Summary

If these appraisals are accurate, the contemporary production of coastal chinook salmon and steelhead are about half historic levels, whereas the contemporary production of coho and chum salmon may be less than 10% of the historic production.

POTENTIAL ANADROMOUS FISH PRODUCTION

The long term productive potential of natural populations and of hatchery programs may depend, in part, on the ability of fisheries managers to conserve genetic resources. Native stocks have adapted to diverse natural habitats and diverse ocean conditions, which results in higher production potential for the species (Ricker 1972, Horrall 1981, McIntyre 1984). In addition, hatchery programs must have access to genetic raw materials to cope with eventualities (Riggs 1984). Genetic resources are not easily renewed (Riggs 1984) and can be used up inadvertently by fisheries managers through harvest regulations, hatchery stocking strategies, and other traditional management activities that tend to focus on the short term (Kapuscinski and Jacobson 1987).

The capacity of anadromous salmonids to persist when faced with environmental change is a function of the combined evolutionary histories of a species' many different wild stocks. Extensive efforts are being made in agriculture to conserve genetic traits of unique strains of plants in the form of seeds (Hershberger 1980). Genetic traits of fish, however, are not so easily preserved (ODFW) 1982). Because stocks removed from their natural habitat change genetically through time when reared in hatcheries (Hershberger 1980, Allendorf et al. 1987), the only way to conserve genetic resources of salmonids is by maintaining wild populations. However, man influences the genetic diversity of wild populations by harvesting fish, by changing habitats, and by stocking hatchery fish.

Given the current state of human intervention in Pacific Northwest ecosystems, potential production (catch plus escapement) of wild salmonids cannot be equated to historical production. Estimating the potential production of anadromous salmonids is dependent upon understanding what is limiting each species and the gains that can be realized by overcoming the limitation. An estimate of the potential production of salmonids that could be realized from Oregon coastal streams will require a systematic inventory of stream and estuarine habitat.

Examples of some general approaches to increasing production of anadromous salmonids follow.

Increased Spawner Abundance

For some species, such as coho salmon, increases in spawner abundance have the potential to result in increased adult production. One approach to getting an idea of the relative magnitude of this increased production for coho salmon is to look at streams where we have smolt production data as examples. The Research and Development Section of ODFW estimated potential smolt production based on habitat capacity (Nickelson et al. In Press) and actual smolt production in seven different streams during the period 1988-92. Because of low numbers of spawners, only one of these streams consistently achieved smolt production levels near the estimated potential. For all streams combined, actual smolt production averaged only 55% of potential. If the seeding level of these streams is typical of Oregon coastal streams, and current adult production of wild coho salmon is about 100,000 fish annually, then this suggests that production could be increased by about 80,000 fish

annually, by reducing factors causing mortality between the smolt stage and the spawner stage.

Although harvest in the ocean and rivers is not the only factor influencing survival between the smolt stage and the spawner stage (*e.g.* environmental conditions in the ocean, predation), it is by far the largest source of mortality of adult coho salmon. If adult production of a population (including numbers harvested) is going to reach full potential, harvest rate must be reduced in situations where spawner abundance is too low to seed the stream habitat to its smolt production potential, unless other smolt-to-spawner mortality factors diminish or are actively reduced. Present smolt production potential of coastal streams should not be viewed as an insurmountable limit because we have evidence that smolt production potential can be increased through habitat restoration in some streams.

Habitat Restoration

The potential for increased production of coho salmon, chinook salmon, chum salmon, steelhead, and cutthroat trout from habitat restoration is difficult to predict. The key to successful habitat restoration is identification of the limiting habitat. For each species, for example, we need to know if the population is limited by spawning gravel, estuarine habitat, winter rearing habitat, etc. By identifying and addressing the type of habitat that is most limiting, we increase the likelihood that habitat improvement will result in an increase in the population.

For example, the Bureau of Land Management has recently completed winter habitat restoration for coho salmon based on a limiting factors analysis (Nickelson et al. In Press), in two study streams . The estimated potential coho salmon smolt production in the treated reaches was increased by 500-700%. This level of smolt production has yet to be achieved in these streams because of low spawner abundance; however, overwinter survival increased four-fold compared to pre-treatment estimates of survival (Rodgers et al. In Press). If these levels of increased production could be achieved in 10% of the coho salmon habitat on the coast and we achieved adequate spawner escapement, total production could increase an additional 50-70% (90,000-120,000 fish annually). At a cost of about $40,000 per mile (telephone communication November 1992 with Robert House, Bureau of Land Management, Salem, Oregon), such a program would cost approximately $20 million.

It has been the "conventional wisdom" that changing habitat to favor coho salmon will be a detriment to trout. However, increases in steelhead and cutthroat trout in the two streams mentioned above have been greater than for coho salmon, suggesting that some restoration methods are effective enhancement tools for all three species.

When the factors that are believed to be limiting the contemporary production of chinook salmon in specific river basins are appraised, it appears that there is essentially no opportunity to increase production of chinook salmon from some river basins, but there may be an opportunity to substantially increase production of chinook salmon from other river basins. For example, little opportunity may exist to produce more chinook salmon in the Tillamook, Nestucca, Siletz, and Coquille basins, because suitable rearing

areas are believed to be relatively limited in comparison to presently available spawning areas and adult spawning populations. On the other hand, there may be opportunities to increase production of adult chinook salmon in basins like the Yaquina, Umpqua, and Coos, because suitable rearing areas are believed to be extensive in comparison with presently available spawning areas and adult spawning populations.

The current depressed abundance of chinook salmon in the ocean offshore of Oregon is related more to the status of generally reduced production from the Sacramento, Klamath, and Rogue basins. Abundance of chinook salmon off Oregon will not significantly increase through efforts to maintain or rehabilitate several populations in the south coast region that have been classified as depressed. Even at "healthy" population abundance levels, these depressed populations would probably not produce more than several hundred or a few thousand fish each.

Year-to-year variation in the abundance of chum salmon produced in Oregon coastal rivers appears to be largely driven by oceanic conditions in the North Pacific Ocean. However, several problems have been identified in the freshwater environment, that if corrected, may increase overall production of chum salmon. Some of these were discussed earlier, and include replacement of selected culverts with bridges, regulation of gravel removal operations, and removal of selected tide gates.

Hatchery Production

An opportunity may exist to improve the overall abundance of chinook salmon in the ocean offshore of Oregon by increasing releases of south-migrating chinook salmon (such as Rogue River fish) into the lower Columbia River. Such a program is being evaluated at present. Although the effort has demonstrated some hope for being successful, no assurances may be made that the procedure will increase the overall abundance of adult chinook salmon available to the fishery offshore of Oregon. There is substantial basis for caution and for exercising stringent biological control on the experimental program.

Because harvest rate on coho salmon in fisheries off Oregon and California is limited by the abundance of naturally produced fish, increases in hatchery production of coho salmon would not allow an increase in harvest rate. More hatchery production would, however, allow a larger harvest quota.

Increases in hatchery production of all species may be constrained by impacts the hatchery fish have on genetic diversity and abundance of wild populations and the impacts they have on abundance of other species. For example, large numbers of coho salmon smolts released from hatcheries may consume a large share of the wild chum salmon fry in freshwater and estuarine environments. Hatchery juveniles can also reduce survival of wild juveniles through competition in areas where food or space are limiting wild fish production, particularly if hatchery juveniles are larger than wild juveniles (Nickelson et al. 1986). Juvenile hatchery salmonids may compete with wild salmonids in the ocean, particularly in years of low ocean productivity. Hatchery adults can decrease the productivity of wild populations when they

interbreed with wild fish, which has led to constraints included in ODFW's Wild Fish Management Policy. The policy specifies that hatchery fish spawning with wild fish must not exceed 50% of the breeding population. The policy restricts the percentage to even lower levels if specified actions have not been employed to keep hatchery fish genetically similar to wild fish Successful efforts to increase abundance of wild spawners will therefore permit greater abundance of hatchery fish under the policy.

REFERENCES

Allendorf, F. W. and R. F. Leary. 1988. Conservation and distribution of genetic variation in a polytypic species, the cutthroat trout. Conservation Biology 2: 170-184.

Allendorf, F. W., and N. Ryman. 1987. Genetic management of hatchery stocks. Pages 141-159. *In* N. Ryman and F. Utter [eds.] Population genetics and fishery management. Washington Sea Grant, University of Washington Press, Seattle.

Allendorf, F. W., and S. R. Phelps. 1980. Electrophoretic detection of the loss of genetic variation in a hatchery stock of cutthroat trout (*Salmo clarki*). Transactions of the American Fisheries Society 109:537-543.

Allendorf, F. W., D. M. Espeland, D. T. Scow, and S. R. Phelps. 1980. Coexistence of native and introduced rainbow trout in the Kootenai River drainage. Proceedings of the Montana Academy of Sciences 39:28-36.

Allendorf, F. W., N. Ryman, F. W. Utter. 1987. Genetics and fisheries management: Past, present, and future. Pages 1-19. *In* N. Ryman and F. Utter [eds.] Population genetics and fishery management. Washington Sea Grant, University of Washington Press, Seattle.

Altukhov, Y. P., and E. A. Salmenkova. 1987. Stock transfer relative to natural organization, management, and conservation of fish populations. Pages 333-343. *In* N. Ryman and F. Utter [eds.] Population genetics and fishery management. Washington Sea Grant, University of Washington Press, Seattle.

Baggerman, B. 1960. Salinity preference, thyroid activity and seaward migration of four species of salmon (*Oncorhynchus*). Journal of the Fisheries Research Board of Canada 17:295-322.

Bakkala, R. G. 1970. Synopsis of biological data on the chum salmon, *Oncorhynchus keta* (Walbaum) 1792. FAO Fisheries Synopsis 41; U.S. Fish and Wildlife Service Circular 315.

Behnke, R. J. 1979. Monograph of the Genus *Salmo* of western North America. USDA. Forest Service, Rocky Mountain Region, Lakewood, Colorado.

Behnke, R. J. 1979. Monograph of the native trouts of the genus *Salmo* of western North America. USDA Forest Service, Region 2, Lakewood, CO.

Benner, P. 1992. Historical reconstruction of the Coquille River and surrounding landscape [Draft]. Pacific Northwest Forest and Range Experiment Station, USDA. Forest Service, Corvallis.

Berry, R. A.. 1975. Status of chum salmon runs in selected coastal streams of Oregon, 1974. Fish Commission of Oregon, Information Report 75-2, Portland.

Bottom, D. L., T. E. Nickelson, and S. L. Johnson. 1986.. Research and Development of Oregon's Coastal Salmon Stocks: Coho Salmon Model.

Oregon Department of Fish and Wildlife, Annual Progress Report AFC-127, Portland.

Busack, C. A., G. H. Thorgaard, M. P. Brannon, and G. A. E. Gall. 1980. An electrophoretic, karyotypic and meristic characterization of the Eagle Lake trout, *Salmo gairdneri aquilarum*. Copeia 1980:418-424.

Bustard, D. R., and D. W. Narver. 1975a. Aspects of the winter ecology of juvenile coho salmon (*Oncorhynchus kisutch*) and steelhead trout (*Salmo gairdneri*). Journal of the Fisheries Research Board of Canada 32:667-680.

Campton, D. E., and J. M. Johnston. 1985. Electrophoretic evidence for a genetic admixture of native and non-native rainbow trout in the Yakima River, Washington. Transactions of the American Fisheries Society 114:782-793.

Chilcote, M. W., S. A. Leider, and J. J. Loch. 1986. Differential reproductive success of hatchery and wild summer-run steelhead under natural conditions. Transactions of the American Fisheries Society 115:726-735.

Chilcote, M., C. Dale, K. Kostow, H. Schaller, and H. Weeks. 1992. Wild fish management policy biennial progress report. Oregon Department of Fish and Wildlife, Fish Division, Portland.

Cleaver, F. C.. 1951. Fisheries statistics of Oregon. Oregon Fish Commission Contribution 16.

Cooney, C. X., and S. E. Jacobs. 1990. Oregon coastal salmon spawning surveys, 1989. Oregon Department of Fish and Wildlife, Ocean Salmon Management Progress Report, Portland.

Cooney, C. X., and S. E. Jacobs. 1992. Oregon coastal salmon spawning surveys, 1990. Oregon Department of Fish and Wildlife, Information Reports (Fish) 92-2, Portland.

Cramer, S. P., T. D. Satterthwaite, R. R. Boyce, and B. P McPherson. 1985. Lost Creek Dam fisheries evaluation, phase I completion report, 1974 through 1982. Oregon Department of Fish and Wildlife, Fish Research Project DACW57-77-C-0027, Portland.

Currens, K. P. 1987. Genetic differentiation of resident and anadromous rainbow trout, *Salmo gairdneri*, in the Deschutes River basin, Oregon. Masters thesis. Oregon State University, Corvallis.

Fisher, J. P., and W. G. Pearcy. 1985. Studies of juvenile salmonids off the Oregon and Washington coast, 1985. Oregon State University Sea Grant College Program, ORESU-T-85-004, Corvallis.

Gall, G. A. E. 1987. Inbreeding. Pages 47-87. *In* N. Ryman and F. Utter [eds.] Population genetics and fishery management. Washington Sea Grant, University of Washington Press, Seattle.

Gerstung, E. R. 1981. Status and management of the coast cutthroat trout (*Salmo clarki clarki*) in California. Cal-Neva Wildlife Transactions 1981: 25-32.

Gharrett, J. T., and J. I. Hodges. 1950. Salmon fisheries of the coastal rivers of Oregon south of the Columbia. Oregon Fish Commission Contribution 13.

Giger, R. D. 1972. Ecology and management of coastal cutthroat trout in Oregon. Oregon State Game Commission, Fishery Research Report Number 6, Corvallis.

Glova, G. J. 1986. Interaction for food and space between experimental populations of juvenile coho salmon (*Oncorhynchus kisutch*) and coastal cutthroat trout (*Salmo clarki*) in a laboratory stream. Hydrobiologia 131: 155-168.

Glova, G. J. 1987. Comparison of allopatric cutthroat trout stocks with those sympatric with coho salmon and sculpins in small streams. Environmental Biology of Fishes 20: 275-284.

Glova, G. J. 1984. Management implications of the distribution and diet of sympatric populations of juvenile coho salmon and coastal cutthroat trout in small streams in British Columbia, Canada. Progressive Fish Culturist 46: 269-277.

Glova, G. J. and J. C. Mason. 1977. Interactions for food and space between sympatric populations of underyearling coho salmon and coastal cutthroat trout in a stream simulator during summer. Fisheries Research Board of Canada Manuscript Report 1428.

Gonor, J. J., J. R. Sedell, and P. A. Benner. 1988. What we know about large trees in estuaries, in the sea, and on coastal beaches. Pages 83-111. *In* C. Maser, R. F. Tarrant, J. M. Trappe, and J. F. Franklin, [tech. eds.] From the Forest to the Sea: A Story of Fallen Trees. Pacific Northwest Research Station, General Technical Report PNW-GTR-229, USDA. Forest Service, Portland.

Gunsolus, R. T. 1978. The status of Oregon coho and recommendations for managing the production, harvest, and escapement of wild and hatchery-reared stocks. Oregon Department of Fish and Wildlife, Columbia Region Processed Report, Clackamas.

Hall, J. D., G. W. Brown, and R. L. Lantz. 1987. The Alsea Watershed study: a retrospective. Pages 399-416. *In* E. O. Salo and T. W. Cundy, [eds.] Streamside Management: Forestry and Fishery Interactions. Institute of Forest Resources Contribution No. 57, University of Washington, Seattle.

Hallock, R. J., and D. H. Fry, Jr. 1967. Five species of salmon, *Oncorhynchus*, in the Sacramento River, California. California Fish and Game 53:5-22.

Hart, J. L. 1973. Pacific fishes of Canada. Fisheries Research Board of Canada Bulletin 180, Ottawa.

Hartman, G. F. and C. A. Gill. 1968. Distribution of juvenile steelhead and cutthroat trout (*Salmo gairdneri* and *S. clarki clarki*) within streams in southwestern British Columbia. Journal of the Fisheries Research Board of Canada 25: 33-48.

Hartt, A. C. 1980. Juvenile salmonids in the oceanic ecosystem - the critical first summer. Pages 25-57. *In* W. J. McNeil and D. C. Himsworth, [eds.] Salmonid ecosystems of the North Pacific. Oregon State University Press, Corvallis.

Hartt, A. C., and M. B. Dell. 1986. Early oceanic migrations and growth of juvenile Pacific salmon and steelhead trout. International North Pacific Fisheries Commission Bulletin 46:1-105.

Healey, M. C. 1991. Life history of chinook salmon (*Oncorhynchus tshawytscha*). Pages 311-394. *In* C. Grant and L. Margolis, [eds.] Pacific salmon life histories. University of British Columbia, Vancouver.

Henry, K. A. 1953. Analysis of factors affecting the production of chum salmon (*Oncorhynchus keta*) in Tillamook Bay. Fish Commission of Oregon Contribution 18.

Henry, K. A. 1954. Age and growth of Tillamook Bay chum salmon (*Oncorhynchus keta*). Fish Commission of Oregon Contribution 19.

Henry, K. A. 1964. Oregon coastal salmon and steelhead tagging programs. Part 1. Tillamook Bay, 1953. Fish Commission of Oregon Contribution 28.

Hershberger, W. K. 1980. Genetic impact of hatchery and other types of management on anadromous salmonids. Affidavit filed on 21 January 1980 in the case of *United States v. State of Washington* in the U.S. District Court, Western District of Washington, Tacoma.

Hicks, B. J., J. D. Hall, P. A. Bisson, and J. R. Sedell. 1991. Responses of salmonids to habitat changes. American Fisheries Society Special Publication 19:483-518.

Hoffnagle, J. and R. Olson. 1974. The salt marshes of the Coos Bay estuary. Port of Coos Bay Commission and Oregon Institute of Marine Biology, University of Oregon, Charleston.

Holtby, L. B. 1988. Effects of logging on stream temperatures in Carnation Creek, British Columbia, and associated impacts on coho salmon (*Oncorhynchus kisutch*). Canadian Journal of Fisheries and Aquatic Sciences 45:502-515.

Holtby, L. B., B. C. Anderson, and R. K. Kadowaki. 1990. Importance of smolt size and early ocean growth to interannual variability in marine survival of coho salmon (*Oncorhynchus kisutch*). Canadian Journal of Fisheries and Aquatic Sciences 47:2181-2194.

Horrall, R. M. 1981. Behavioral stock isolation mechanism in Greater Lakes fishes with special reference to homing and imprinting. Canadian Journal of Fisheries and Aquatic Sciences 38:1481-1496.

House, R. A., and P. L. Boehne. 1987. The effect of stream cleaning on salmonid habitat and populations in a coastal Oregon drainage. Western Journal of Applied Forestry 2:84-87.

Iwata, M., and S. Komatsu. 1984. Importance of estuarine residence for adaptation of chum salmon (*Oncorhynchus keta*) fry to seawater. Canadian Journal of Fisheries and Aquatic Sciences 41:747-749.

Jacobs, S. E. 1989. Oregon coastal salmon spawning surveys, 1986-1988. Oregon Department of Fish and Wildlife, Ocean Salmon Management Three-Year Update Progress Report, Portland

Jacobs, S. E., and C. X. Cooney. 1991. Improvement of methods used to estimate the spawning of Oregon coastal natural coho salmon. Oregon Department of Fish and Wildlife, Ocean Salmon Management Annual Progress Report F-145-R, Portland

Johnston, J. M. 1981. Life histories of anadromous cutthroat with emphasis on migratory behavior. Pages 123-127. *In* E. L. Brannon and E. O. Salo, [eds.] Proceedings of the salmon and trout migratory behavior symposium. University of Washington, School of Fisheries, Seattle.

Kapuscinski, A. R., and L. D. Jacobson. 1987. Genetic guidelines for fisheries management. University of Minnesota Sea Grant, St. Paul.

Kenaston, K. R. 1987. Steelhead Production Factors. Oregon Department of Fish and Wildlife, Annual Progress Report F-120-R, Portland.

Kenaston, K. R. 1989. Estimated run size of winter steelhead in Oregon Coastal streams, 1980-85. Oregon Department of Fish and Wildlife, Information Reports (Fish) 89-1, Portland.

Lannan, J. C. 1980. Adaptive and behavioral responses to artificial propagation in a stock of chum salmon, *Oncorhynchus keta*. Pages 309-312. *In* W. J. McNeil and D. C. Himsworth, [eds.] Salmonid ecosystems of the North Pacific. Oregon State University Press, Corvallis.

Leary, R. F., F. W. Allendorf, and K. L. Knudsen. 1985. Developmental instability as an indicator of reduced genetic variation in hatchery trout. Transactions of the American Fisheries Society 114:230-235.

Leider, S. A., J. J. Loch, and P. L. Hulett. 1987. Studies of hatchery and wild steelhead in the lower Columbia region. Washington Department of Game, Annual Progress Report 87-8, Olympia.

Lichatowich J. A., and J. W. Nicholas. In Press. Oregon's first century of hatchery intervention in salmon production: Evolution of the hatchery program, legacy of a utilitarian philosophy and management recommendations. *In* Proceedings of the symposium on biological

interactions of enhanced and wild salmonids, June 17-20, 1991, Nanaimo, B. C. Department of Fisheries and Oceans, Pacific Region.

Lichatowich, J. A. 1989. Habitat alteration and changes in abundance of coho (*Oncorhynchus kisutch*) and chinook (O. tshawytscha) salmon in Oregon's coastal streams. Pages 92-99. *In* C. D. Levings, L. B. Holtby, and M. A. Henderson, [eds.] On the effects of habitat alteration on salmonid stocks. Special Publication of Canadian Fisheries and Aquatic Sciences No. 105, Department of Fisheries and Oceans, Ottawa.

Lister, D. B., and H. S. Genoe. 1970. Stream habitat utilization by cohabiting underyearlings of chinook (*Oncorhynchus tshawytscha*) and coho (*O. kisutch*) salmon in the Big Qualicum River, British Columbia. Journal of the Fisheries Research Board of Canada 27:1215-1224.

Loomis, D., R. Anglin, and D. Liscia. 1991. Fish management review, southwest region. Oregon Department of Fish and Wildlife, Roseburg.

Lowry, G. R. 1965. Movement of cutthroat trout, *Salmo clarki clarki* (Richardson) in three Oregon coastal streams. Transactions of the American Fisheries Society 94: 334-338.

MacCrimmon, H. R. 1971. World distribution of rainbow trout (*Salmo gairdneri*). Journal of the Fisheries Research Board of Canada 28:663-704.

Major, R. L., J. Ito, S. Ito, and H. Godfrey. 1978. Distribution and origin of chinook salmon (*Oncorhynchus tshawytscha*) in offshore waters of the North Pacific Ocean. International North Pacific Fisheries Commission Bulletin 38:54 p.

McIntyre, J.D. 1984. Differentiation of anadromous salmonid stocks. Pages 9-15. *In* J. M. Walton and D. B. Houston, [eds.] Proceedings of the Olympic Wild Fish Conference. Peninsula College Fisheries Technology Program, Port Angeles, Washington.

McPhail, J. D., and C. C. Lindsey. 1970. Freshwater fishes of northwestern Canada and Alaska. Bulletin of the Fisheries Research Board of Canada. 173:381 p.

Moring, J. R., and R. L. Lantz. 1975. The Alsea watershed study: Effects of logging on the aquatic resources of three headwater streams of the Alsea River, Oregon. Part I - Biological studies. Oregon Department of Fish and Wildlife, Fishery Research Report Number 9, Corvallis.

Moring, J. R., R. L. Youker, and R. M. Hooton. 1986. Movements of potamodromous coastal cutthroat trout, *Salmo clarki clarki*, inferred from tagging and scale analyses. Fisheries Research (Amsterdam) 4:343-354.

Mullen, R. E. 1981a. Oregon's commercial harvest of coho salmon *Oncorhynchus kisutch* (Walbaum), 1892-1960. Oregon Department of Fish and Wildlife, Information Reports (Fish) 81-3, Portland.

Mullen, R. E. 1981b. Estimates of historical abundance of coho salmon *Oncorhynchus kisutch* (Walbaum), in Oregon coastal streams and in the Oregon Production Index Area. Oregon Department of Fish and Wildlife, Information Reports (Fish) 81-5, Portland.

Mundie, J. H. 1969. Ecological implications of the diet of juvenile coho in streams. Pages 135-152. *In* T. G. Northcote [ed.] Symposium on salmon and trout in streams. H. R. MacMillan Lectures in Fisheries. University. of British Columbia, Vancouver, B.C. 388 p.

Nawa, R. K., C. A. Frissell, J. L. Ebersole, and W. J. Liss. 1992. Life history and persistence of anadromous salmonid stocks in relation to stream habitats and watershed classification. Oregon State University Oak Creek Laboratory of Biology, Annual Progress Report prepared for Oregon Department of Fish and Wildlife, Portland.

Neave, F. 1955. Notes on the seaward migration of pink and chum salmon fry. Journal of the Fisheries Research Board of Canada 12:369-374.

Neave, F., T. Yonemori, and R. Bakkala. 1976. Distribution and origin of chum salmon in offshore waters of the North Pacific Ocean. International North Pacific Fisheries Commission Bulletin 35, Vancouver.

Nehlsen, W., J. E. Williams, and J. A. Lichatowich. 1991. Pacific salmon at the crossroads: Stocks at risk from California, Oregon, Idaho, and Washington. Fisheries 16: 4-21.

Nelson, K., and M. Soulé. 1987. Genetical conservation of exploited fishes. Pages 345-368. *In* N. Ryman and F. Utter [eds.] Population genetics and fishery management. Washington Sea Grant, University of Washington Press, Seattle.

Nicholas, J. W. and D. G. Hankin. 1989b. Variations in distribution of juvenile chinook salmon in Oregon coastal river basins: Implications to future stock transfer practices. Pages 189-196. *In* B. G. Shepherd, [rapporteur] Proceedings of the 1988 Northeast Pacific Chinook and Coho Salmon Workshop. North Pacific International Chapter American Fisheries Society, Penticton, British Columbia.

Nicholas, J. W., and D. G. Hankin. 1989a. Chinook salmon populations in Oregon coastal river basins: description of life histories and assessment of recent trends in run strengths. Oregon Department of Fish and Wildlife, Information Reports (Fish) 88-1, second edition. (Printed by Oregon State University Extension Service, Catalog Number E 8402, Corvallis).

Nickelson, T. E. 1983. Influence of ocean conditions on abundance of coho salmon (*Oncorhynchus kisutch*) in the Oregon Production Area. Oregon Department of Fish and Wildlife, Information Reports (Fish) 83-6, Portland.

Nickelson, T. E. 1986. Influences of upwelling, ocean temperature, and smolt abundance on marine survival of coho salmon (*Oncorhynchus kisutch*) in

the Oregon Production Area. Canadian Journal of Fisheries and Aquatic Sciences 43:527-535.

Nickelson, T. E., J. D. Rodgers, S. L. Johnson, and M. F. Solazzi. 1992a. Seasonal changes in habitat use by juvenile coho salmon (*Oncorhynchus kisutch*) in Oregon coastal streams. Canadian Journal of Fisheries and Aquatic Sciences 49:783-789.

Nickelson, T. E., M. F. Solazzi, and S. L. Johnson. 1986. Use of hatchery coho salmon (*Oncorhynchus kisutch*) presmolts to rebuild wild populations in Oregon coastal streams. Canadian Journal of Fisheries and Aquatic Sciences 43:2443-2449.

Nickelson, T. E., M. F. Solazzi, S. L. Johnson, and J. D. Rodgers. 1992b. Effectiveness of selected stream improvement techniques to create suitable summer and winter rearing habitat for juvenile coho salmon (*Oncorhynchus kisutch*) in Oregon coastal streams. Canadian Journal of Fisheries and Aquatic Sciences 49:790-794.

Nickelson, T. E., M. F. Solazzi, S. L. Johnson, and J. D. Rodgers. In Press. An approach to determining stream carrying capacity and limiting habitat for coho salmon (*Oncorhynchus kisutch*). *In* Proceedings of the coho workshop, May 26-28, 1992 at Nanaimo, B.C.

Oakley, A. L. 1962. Summary report on Tillamook Bay chum salmon. Oregon Fish Commission, Processed Information Report, Portland.

Oakley, A. L. 1966. A summary of information concerning chum salmon in Tillamook Bay. Fish Commission of Oregon Research Briefs 12:5-21.

ODFW (Oregon Department of Fish and Wildlife). 1982. Comprehensive plan for production and management of Oregon's anadromous salmon and trout Part II-Coho salmon plan. Oregon Department of Fish and Wildlife, Fish Division, Portland.

ODFW. 1990. Effects of Lost Creek Dam on winter steelhead in the Rogue River, phase II completion report. Oregon Department of Fish and Wildlife, Fish Research Project DACW57-77C-0033 Portland.

ODFW. 1991. Comprehensive plan for production and management of Oregon's anadromous salmon and trout Part IV-Coastal chinook salmon plan. Oregon Department of Fish and Wildlife, Fish Division, Portland.

Pearcy, W. G. 1992. Ocean ecology of North Pacific salmonids. Washington Sea Grant Program, University of Washington Press, Seattle.

Pearcy, W. G., and J. P. Fisher. 1988. Migrations of coho salmon, *Oncorhynchus kisutch*, during their first summer in the ocean. Fishery Bulletin 86:173-195.

Pearcy, W. G., R. D. Brodeur, and J. P. Fisher. 1990. Distribution and biology of the juvenile cutthroat trout *Oncorhynchus clarki clarki* and steelhead *O. mykiss* in coastal waters off Oregon and Washington. Fishery Bulletin 88:697-711.

PFMC (Pacific Fisheries Management Council). 1992. Oregon coastal natural coho review team report: An assessment of the status of the Oregon coastal natural coho stock as required under the definition of overfishing. Pacific Fisheries Management Council, Portland.

Reeves, G. H., F. H. Everest, and J. D. Hall. 1987. Interactions between the redside shiner (*Richardsonius balteatus*) and the steelhead trout (*Salmo gairdneri*) in western Oregon: the influence of water temperature. Canadian Journal of Fisheries and Aquatic Sciences 44:1603-1613.

Reimers, P. E. 1970. Chum salmon in Elk and Sixes rivers, Oregon. Fish Commission of Oregon, Information Report 70-2, Portland.

Reisenbichler, R. R., and J. D. McIntyre. 1977. Genetic differences in growth and survival of juvenile hatchery and wild steelhead trout, *Salmo gairdneri*. Journal of the Fisheries Research Board of Canada 34:123-128.

Reiser, D. W., and T. C. Bjornn. 1979. Habitat requirements of anadromous salmonids. Ch. 1. *In* W. R. Meehan [tech. ed.] Influence of forest and rangeland management on anadromous fish habitat in the western United States and Canada. Pacific Northwest Forest and Range Experiment Station, USDA. Forest Service, Portland.

Resch, V. H., A. V. Brown, A. P. Covich, M. E. Gurtz, H. W. Li, G. W. Minshall, S. R. Reice, A. L. Sheldon, J. B. Wallace, and R. Wissmar. 1988. The role of disturbance in stream ecology. Journal of the North American Benthological Society 7:433-455.

Ricker, W. E. 1980. Causes of the decrease in age and size of chinook salmon (*Oncorhynchus tshawytscha*). Canadian Technical Report of Fisheries and Aquatic Sciences 944.

Ricker, W. E. 1981. Changes in average size and average age of Pacific salmon. Canadian Journal of Fisheries and Aquatic Sciences 38:1636-1656.

Ricker, W. E., and W. P. Wickett. 1980. Causes of the decrease in size of coho salmon (*Oncorhynchus kisutch*). Canadian Technical Report of Fisheries and Aquatic Sciences 917.

Ricker, W. E., H. T. Bilton, and K. V. Aro. 1978. Causes of the decrease in size of pink salmon (*Oncorhynchus gorbuscha*). Fisheries and Marine Service (Canada) Technical Report 820.

Ricker, W. E. 1972. Hereditary and environmental factors affecting certain salmonid populations. Pages 19-160. *In* R. C. Simon and P. A. Larkin, [eds.] The Stock Concept of Pacific Salmon. H. R. MacMillan Lectures in Fisheries, University of British Columbia, Vancouver, Canada.

Riggs, L. A. 1984. A scenario for genetic resource management of salmon and sea-run trout. Pages 45-52 *In* J. M. Walton and D. B. Houston, [eds.]

Proceedings of the Olympic Wild Fish Conference. Peninsula College Fisheries Technology Program, Port Angeles, Washington.

Rodgers, J. D., S. L. Johnson, T. E. Nickelson, and M. F. Solazzi. In Press. The seasonal use of natural and constructed habitat by juvenile coho salmon (*Oncorhynchus kisutch*) and preliminary results from two habitat improvement projects on smolt production in Oregon coastal streams. *In* Proceedings of the coho workshop, May 26-28, 1992 at Nanaimo, B.C.

Salo, E. O. 1991. Life history of chum salmon (*Oncorhynchus keta*). Pages 233-309. *In* C. Groot and L. Margolis, [eds.] Pacific salmon life histories. University of British Columbia, Vancouver.

Scarnecchia, D. L. 1981. Effects of streamflow and upwelling on yield of wild coho salmon (*Oncorhynchus kisutch*) in Oregon. Canadian Journal of Fisheries and Aquatic Sciences 38:471-475.

Schwartz, J. S. 1991. Influence of geomorphology and land use on distribution and abundance of salmonids in a coastal Oregon basin. Ma ster's Thesis, Oregon State University, Corvallis.

Scott, W. B., and E. J. Crossman. 1973. Freshwater fishes of Canada. Fisheries Research Board of Canada Bulletin 184.

Sedell, J. R., and J. L. Froggatt. 1984. Importance of streamside forests to large rivers: the isolation of the Willamette River, Oregon, U.S.A., from its floodplain by snagging and streamside forest removal. Internationale Vereinigung für theoretische und angewandte Limnologie Verhandlungen 22:1828-1834.

Sedell, J. R., and K. J. Luchessa. 1982. Using the historical record as an aid to salmonid habitat enhancement. Pages 210-223. *In* N. B. Armantrout [ed.] Acquisition and utilization of aquatic habitat inventory information. American Fisheries Society, Bethesda.

Shelboun, J. E. 1966. Influence of temperature, salinity, and photoperiod on the aggregations of chum salmon fry. Journal of the Fisheries Research Board of Canada 23:293-304.

Sheppard, D. 1972. The present status of the steelhead trout stocks along the Pacific coast. Pages 519-556. *In* D. H. Rosenberg [ed.] A Review of the Oceanography and Renewable Resources of the Northern Gulf Of Alaska . IMS Report R72-23, Sea Grant Report 73-3, Institute of Marine Science, University of Alaska, Fairbanks.

Smith, H. S. 1956. Fisheries statistics of Oregon 1950-1953. Fish Commission of Oregon Contribution 22.

Sparrow, R. A. H. 1968. A first report of chum salmon fry feeding in fresh water of British Columbia. Journal of the Fisheries Research Board of Canada 25:599-602.

Sumner, F. H. 1953. Migrations of salmonids in Sand Creek, Oregon. Transactions of the American Fisheries Society 82:139-150.

Sumner, F. H. 1962. Migration and growth of the coastal cutthroat trout in Tillamook County, Oregon. Transactions of the American Fisheries Society 91:77-83.

Sumner, F. H. 1972. A contribution to the life history of the cutthroat trout in Oregon. Oregon State Game Commission, Corvallis.

Thomas, D. W. 1983. Changes in Columbia River estuary habitat types over the past century. Columbia River Estuary Data Development Program, Columbia River Estuary Study Task Force, Astoria, Oregon.

Tomasson, T. 1978. Age and growth of cutthroat trout, *Salmo clarki clarki* Richardson, in the Rogue River, Oregon. Master's thesis. Oregon State University, Corvallis.

Trotter, P. C. 1989. Coastal cutthroat trout: A life history compendium. Transactions of the American Fisheries Society 118:463-473.

Tschaplinski, P. J., and G. F. Hartman. 1983. Winter distribution of juvenile coho salmon (*Oncorhynchus kisutch*) before and after logging in Carnation Creek, British Columbia, and some implications for overwinter survival. Canadian Journal of Fisheries and Aquatic Sciences 40:452-461.

USFWS (U.S. Fish and Wildlife Service). 1988. Management of Pacific salmon stocks: A draft issue paper. Population Ecology Section, National Fishery Research Center, unpublished paper, Seattle.

Vuorinen, J. 1984. Reduction of genetic variability in a hatchery stock of brown trout, *Salmo trutta* L. Journal of Fish Biology 24:334-348.

APPENDIX A
OREGON COASTAL ANADROMOUS SALMONID POPULATION STATUS CLASSIFICATIONS

Populations were classified as **HEALTHY** if:

1. Available spawning habitat has generally been fully seeded and
2. Abundance trends have remained stable or increased over the last 20 years.

Populations were classified as **SPECIAL CONCERN** if either:

1. The population is probably composed of 300 or fewer spawners, or
2. A substantial risk exists for interbreeding at a level in excess of standards established by the Wild Fish Management Policy between the population and stray hatchery fish.

Populations were classified as **DEPRESSED** if any of the following have occurred:

1. Available spawning habitat has generally not been fully seeded, or
2. Abundance trends have declined over the last 20 years, or
3. Abundance trends in recent years have been generally below 20-year averages.

Populations were classified as **UNKNOWN** if there was insufficient data available to judge their status. Additionally, **DEPRESSED** classifications superseded **SPECIAL CONCERN** classifications, i.e. some populations classified as depressed may also fit within criteria under the **SPECIAL CONCERN** classification.

GOVERNOR'S COASTAL SALMONID RESTORATION INITIATIVE

December 15-17, 1992

SUMMARY REPORT

Synthesized and Written by

Mary S. Potter
Environmental Writer

Provided by
Oregon Department of Fish and Wildlife
Portland, Oregon

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Governor's Coastal Salmonid

Restoration Initiative

December 15-17, 1992

GOAL STATEMENT: Develop cooperative strategies between public and private sectors to protect and restore the productivity of Oregon's coastal ecosystem to a level that avoids the need for listing of salmon, steelhead, or cutthroat trout under the federal Endangered Species Act and sustains production of these fisheries at levels that provide substantial environmental, economic and social benefits to all Oregonians.

INTRODUCTION

Several populations of Oregon coastal salmonids (salmon, steelhead, and cutthroat trout) are at risk and face the prospect of listing under the federal Endangered Species Act (ESA). A concerned group of environmental and fishing organizations has already petitioned to list the Illinois River winter steelhead under the ESA. Oregon has already experienced a loss of jobs and community stability due to the decline of coastal salmonid fisheries. Further decline in the health of Oregon's coastal salmonid populations threatens the environment and economy of the state.

This situation has created lengthy, divisive and emotional debate about who is at fault for the coastal salmonid decline and what steps should be taken to rebuild the populations. Governor Barbara Roberts saw the need to go beyond determining guilt by developing partnerships to take specific steps toward rebuilding the salmonid runs. Strengthening the economic stability of the Oregon coast is closely linked with rebuilding the coastal salmonid populations. However, to accomplish this it is necessary to initiate an essential change in the way these fisheries and Oregon's environment are managed. With the goal of focusing on a group of related species (anadromous salmonids) to address a broad range of ecosystem problems rather than taking a single-species approach, Governor Roberts and Senator Bill Bradbury called for the Coastal Salmonid Restoration Initiative.

To assure representation for all of the interests ultimately affected by and responsible for the health of Oregon's coastal salmonids, Governor Roberts invited over 100 Oregonians from the public and private sector to participate in the conference (Appendix A). Coastal commercial and recreational fisheries were represented; as were local governments; port authorities; native American tribes; agricultural, forest, and mining industries; inland recreational fisheries; environmental interests; academia; and federal and state natural resource management agencies. Oregon's Congressional delegtion and interested state legislators were invited as well. The open conference also allowed other interested people to attend and offer assistance in developing solutions to the problem (Appendix B). Governor Roberts charged the participants with building willing partnerships to develop sound, workable recovery strategies to rebuild coastal salmonid runs. Governor Roberts stressed that Oregonians cannot wait for

perfect knowledge or perfect consensus before acting. Specific action is needed *now* to restore these populations, avoiding the need for listings under the Endangered Species Act, and to recognize a fundamental shift in our understanding of the relationship between Oregon's natural resources and economy.

Dubbed the "Coastal Salmon Summit," the conference attracted statewide interest and caught the attention of natural resource managers in Washington state, California, Alaska, British Columbia, and Washington D.C. The Coastal Salmon Summit began with presentations by and panel discussions among experts (Appendix C) regarding the latest scientific information about Oregon's salmonid populations. This information, plus supplemental documents and displays (Appendix D), provided a common knowledge base for all participants.

Participants were then divided into four working groups to develop proposals for solutions and strategies under the categories of: habitat protection, restoration and enhancement; hatchery production; harvest management; and biological community management. Working through a facilitated process, participants expressed their concerns and brainstormed possible solutions to the problems facing coastal salmonids (Appendix E). The participants then distilled these recommendations to propose general directions for action (Appendix F). From these directives, the working groups developed possible strategies to be implemented by the Oregon Department of Fish and Wildlife (ODFW) and all who have influence on or interest in the health of Oregon's salmonid populations.

Although consensus was not reached on all proposed strategies (nor was it expected), all who attended the conference felt the energy and expressed the desire to act quickly and effectively to reverse the declines in coastal salmonid populations. Participants saw great value in building upon existing strategies and those programs that have been successful in protecting and enhancing salmonid populations. Short-term projects were recommended for immediate implementation while long-term solutions were proposed on a basin-wide or watershed basis. Participants preferred positive incentives to encourage willing participation in the recovery effort rather than the use of regulation and penalties. Attendees acknowledged the problems and solutions extended beyond Oregon's borders and they endorsed a similar effort on a coast-wide basis. Partnerships and coordination at all levels were considered integral to restoring Oregon's salmonid populations. No single interest wanted to make all the concessions necessary for recovery, nor did any of the interests represented want to be perceived as wearing the "black hat" in opposition to recovery efforts. Participants expressed a desire for the restoration process to be flexible in order to meet individual needs while at the same time working toward the common goal.

Many creative and innovative proposals to restore Oregon's coastal salmonid populations were expressed at the Coastal Salmon Summit. Participants shared the energy and enthusiasm to be part of the solution and to help shape a positive future for Oregon's natural environment and coastal communities. This report attempts to capture the highlights of the three-day gathering.

PROPOSED RESTORATION STRATEGIES

After the general "brainstorming" for an inclusive list of ideas (reflected in Appendix E), participants in the Governor's Coastal Salmonid Restoration Initiative were instructed to propose strategies aimed at arresting the decline of and/or reversing trends in the coastal salmonid population that could: 1) be implemented in the next six months, and 2) show measurable results in two years. These strategies were to be *concrete* actions, projects or programs.

The four working groups distilled nearly seven hours of discussion into general proposals for direction (Appendix F). With the above goals as guidance, the general direction proposals were refined into proposed strategies, programs and actions. Although consensus was not reached or expected for each proposal, participants agreed to put forth the following proposed strategies:

Habitat Protection, Restoration and Enhancement

Proposed Action Items To Be Conducted Concurrently:

1. Oregon Department of Fish and Wildlife (ODFW) designate watersheds of critical concern
   - ▸ Develop partnerships (state and federal natural resource agencies, user groups, land managers/owners, local governments, etc.)
   - ▸ Use criteria identified by partnerships to develop objectives for salmonid populations in those watersheds of concern.
2. Compile existing population and habitat inventories
   - ▸ Synthesize existing data available from a variety of sources
   - ▸ Make data accessible for information sharing
3. Identify high priority projects as pilots
   - ▸ Protection
   - ▸ Restoration
4. Implement pilot projects with watershed approach
5. Evaluate pilot projects
   - ▸ Schedule long-term actions based on evaluations

Responsibility For Proposed Action Items:

1. ODFW will identify watersheds of critical concern.
2. Governor will appoint a task force to identify the key players in these watersheds for involvement in the partnerships.
   - ▸ Key players also nominate members of partnership

3. Partnerships will identify the lead agency/entity for each watershed

   - Agency or organization
   - Compile existing data
   - Identify problems in watershed
   - Partners share accountability

4. Partnerships propose pilot projects

   - Restoration actions already identified
   - Additional projects based on compiled data

Habitat Database:

Problems:

- Considerable information and inventories exist, but are not compiled in a central location.
- Data gaps cannot be identified until information is compiled.

Objectives:

- Synthesize existing data into prioritized actions
- Identify information gaps
- Develop plan to fill information gaps

Proposed Watershed Approach:

All interests within the watershed should be involved: forestry, agriculture, commercial and recreational fishery, ports, urban areas, etc.

1. One entity identified to coordinate partnerships within the watershed; accountability shared by all partners.
2. Science will determine the scale of projects within the watersheds as well as the scale of the watershed.
3. Consider watersheds that already have projects underway for pilot watershed approach.
4. Consider the biological integrity of the watershed ecosystem.
5. Identify activities with short-term effects that contribute to the long-term viability of the watershed.
6. In the long term, all watersheds on the Oregon coast should be included. Immediate focus, however, is the critical watersheds.
7. Tie watershed approach to existing plans.

Pilot Projects:

- Preservation: Conserve existing high quality habitat
- Restoration: Rehabilitate habitat under stress

Hatchery Production

Proposed solutions that can be initiated immediately:

1. Develop criteria to evaluate existing and proposed new hatchery or hatchbox programs to meet the recovery goals to preclude listing and sustain production

   - ▸ Rehabilitation must increase wild fish production and avoid negative effects of hatchery fish; implementation must move cautiously to meet fishery needs and avoid negative impacts on wild fish populations.

   - ▸ Example criteria:

     - o Time frame to meet hatchery goals
     - o Cost benefits of hatchery programs
     - o Social values (wide view, benefits to hatchery and wild stocks)

   - ▸ ODFW implement

     - o Pilot projects

       On Oregon Coastal Natural (OCN) streams with naturally spawning stocks of coho on the north coast (Tillamook Bay), central coast, and south coast (Pistol River).

       - Identify limiting factors
       - Technology
       - Explore full opportunities: management as well as cultural
       - Monitor results of hatchbox, hatchery and habitat improvement activities
       - Encourage volunteer participation

     - o Hatchery closures

       - Examine operating hatcheries, those proposed for closure in 93-95, and those proposed for closure in the future
       - Explore areas to use net pens and other supplementation projects

     - o Increase productivity from spawners to juvenile stage

       - Hatchbox
       - Stream habitat improvement
       - Estuarine habitat recovery

2. Mark all west coast hatchery fish

   - ▸ Coast-wide fish summit of state fishery agency directors, National Marine Fisheries Service (NMFS), Pacific Fisheries Management Council (PFMC), etc.

- ▸ Seek federal money to implement marking and for equipment to do the marking
    - o SK grants for automated marking
- ▸ Temporary measure (mark fish only for as long as needed)
- ▸ Objectives:
    - o Continue ocean and in-river harvest
    - o Identify straying
    - o Customize marking to fit the needs

3. Establish coast-wide recovery team of scientists and industry
    - ▸ Identify the problems, priorities, measures to address the problems
    - ▸ Develop gene conservation policy to guide hatchery programs
    - ▸ Review hatchery evaluation criteria
    - ▸ Make recommendations to executive committee of state and federal agency heads and representatives from interested groups
    - ▸ Goal:
        - o Recover fisheries
        - o Recover from Endangered Species Act (ESA) listing
    - ▸ Establish measures and monitor

Harvest Management

Harvest occurs from "gravel to gravel." Fish mortality is associated with a wide range of human activities in the watershed, not just recreational and commercial harvest. Fishers must acknowledge that they will be targeted for short-term actions by reductions in the ocean and river fisheries; however, salmonid recovery will also require extraordinary land management efforts to achieve our goals. The burden must be shared across the board, and coast wide.

Proposed solutions:

1. Structure harvest adjustments to minimize adverse economic impacts.
    - ▸ Identify the economic impacts of all proposed harvest strategies
2. Develop conservation plans for priority at-risk salmonid populations
    - ▸ Form inter-agency and public scientific team to conduct coast-wide biological analysis of population declines

- ▸ Form concurrent inter-agency policy team to prioritize and implement the conservation plan based on recommendations from the scientific team

    - o Funding mechanism (shift funds in Governor's budget or within agency budgets)
    - o Compensation/mitigation package (reimburse or provide incentives for commercial and recreational fishing, landowners and managers, etc.)
    - o Set measurable goals
        - Numeric escapement goals (particularly priority at-risk populations). Default to no ocean or river harvest if escapement not met
        - Short-term based on available habitat
        - Long-term based on optimum habitat
    - o Accountability mechanism
        - Measure results within 2-3 year period

3. Mark all hatchery fish of all species to ensure achievement of the optimum escapement goal while maintaining harvest and traditional fisheries on hatchery populations.

    - ▸ Keep marked fish caught, release unmarked wild fish
    - ▸ Governor and ODFW establish group to determine the most appropriate external mark and coordinate/inform other west coast fisheries agencies as required to implement
    - ▸ Start marking fish (priority on weak populations)
    - ▸ Phase in harvest strategies and catch:release of marked fish
    - ▸ Comprehensive marking plan developed by Governor/ODFW group to keep all agencies and states on board
    - ▸ Work with the Legislature, Governor, ODFW and the federal agencies for funding

        - o All hatchery fish
        - o Hatchbox and STEP project fish in the future

Biological Community Management

Proposed action items to initiate within six months of Coastal Salmon Summit:

1. Improve education and information on natural resource issues:

    - ▸ Governor-appointed group representing all interests to address natural resource education and information for adults and youth.
    - ▸ Coalition from the Coastal Salmon Summit to encourage the editorial board of *The Oregonian* to establish a Natural Resources section of the newspaper (separate from the Sports and Science sections).

- ▸ Identify and pursue existing educational grants

2. Identify and inventory wild fish populations. Optimize genetic and life-history diversity of wild populations

   - ▸ Seek legislative support for identification and inventory effort

     - o Identify and inventory wild populations coast wide using American Fisheries Society list as a starting point
     - o Accelerate effort to determine genetic differences of wild populations
     - o Develop mechanism to protect wild populations (identify populations at greatest risk for prioritizing)
     - o Optimize genetic diversity of wild populations through transfer of wild populations
     - o Identify indicator populations
     - o Identify key limiting factors

   - ▸ Develop indicator population program

     - o Key populations on coast
     - o Monitor adult movement into streams, spawning, etc.
     - o Collect and mark smolts to gather better information on status
     - o Education and information program to make data accessible: What populations identified, location of populations, pressures and causes for reduced numbers, etc.

3. Stewardship ethic

   - ▸ Fund existing programs that are under-funded or not funded at all

     - o Stream enhancement initiative
     - o Coordinated Resource Management Planning (CRMP)
     - o Salmon Trout Enhancement Program (STEP) with emphasis on wild populations
     - o Develop stewardship program and broader "Adopt a Stream" program to "Adopt a Watershed"
     - o Increase funding for SIP

   - ▸ Education and information

4. Governor initiate west coast salmonid summit

   - ▸ Cooperative planning effort with California and Washington state and federal natural resource agencies, local governments, and others

5. Governor initiate effort by west coast federal legislators to modify the Marine Mammal Protection Act during 1993 reauthorization process to improve protection of salmonids

6. Identify state and federal funding sources to implement these programs

# # #

APPENDIX A

APPENDIX A

Coastal Salmonid Restoration Initiative

Governor's Invited Participants

Name	Affiliation	City
Carol Alexander	Greenpeace, Inc.	Chemult
Andy Anderson	Oregon Farm Bureau Federation	Salem
Bruce Andrews	Director, Oregon Department of Agriculture	Salem
Dick Angstrom	Oregon Concrete & Aggregate Producers Assoc.	Salem
Ward Armstrong	Oregon Forest Industries Council	Salem
Don Bacon	Manager, Port of Garibaldi	Garibaldi
Bill Bakke	Oregon Trout	Portland
Spencer Beebe	Ecotrust	Portland
Dick Benner	Director, Oregon Department of Land Conservation and Development	Salem
Charlie Bernards	Metro Trollers, Inc.	Tigard
Dean Bibles	Bureau of Land Management	Portland
Gary Blanchard	Starker Forests	Corvallis
Lorraine Bodi	American Rivers Council	Seattle, WA
Jan Boettcher	Oregon Water Resources Congress	Salem
Scott Boley	Oregon Salmon Commission and Pacific Fishery Management Council	Gold Beach
Fred Borngasser	Commissioner, Josephine County	Grants Pass
Paul Boyer	Teacher, Lincoln County School District	Newport
Doug Breese	Oregon Farm Bureau Federation	Salem
George Brown	Dean of Forestry, Oregon State University	Corvallis
James Brown	State Forester, Oregon Department of Forestry	Salem
Mack Brown	South Coast Lumber	Brookings
Bruce Buckmaster	Grants Pass Irrigation District	Grants Pass
Mike Burrill	Burrill Lumber Company	Medford
John Charles	Oregon Environmental Council	Portland
John Christie	Oregon Small Woodlands Association	Astoria
Bryan Cornell	More Logs	Corvallis
Russ Crabtree	Manager, Port of Brookings Harbor	Brookings
Dennis Creel	Hampton Lumber/Willamina Lumber	Willamina
Dick Dahiin	Cavenham Forest Industries	Portland
Ron Dake	Oregon Sheep Growers' Association	Salem
Jim Dennison	Oregon Small Woodlands Association	Toledo
Judy Densmore	Oregon Tourism Council	Bandon
Ray Doerner	Director, Oregon & California Counties	Roseburg
Bob Doppelt	The Oregon Rivers Council	Eugene
Jerry Dove	Commissioner, Tillamook County and Tillamook Anglers	Tillamook
Bob Eaton	Salmon for All	Astoria
Jeff Feldner	Pacific Fishery Management Council	Logsden
Randy Fisher	Director, Oregon Department of Fish and Wildlife	Portland

Name	Affiliation	City
Margaret Forbes	Clatsop County Economic Development Committee	Astoria
Elizabeth Frenkel	Oregon Sierra Club	Corvallis
Charles Gauvin	Trout Unlimited	Vienna, VA
Boyd Gibbons	Director, California Department of Fish and Game	Sacramento, CA
Leonard Gondack	Roseburg Lumber	Roseburg
John Gorman	Simpson Timber Company	Sublimity
Stan Gregory	Fish & Wildlife Department, Oregon State University	Corvallis
Gary Grimes	International Paper Company	Veneta
Gary Gustafson	Acting Director, Oregon Division of State Lands	Salem
Bob Haindel	Metrol Trollers	West Linn
Dave Hall	Steamboaters Association	Glide
Paul Hanneman	Oregon Fish Forever, Inc.	Cloverdale
Bruce Hansen	Fish Restoration & Enhancement Board	Portland
Fred Hansen	Director, Oregon Department of Environmental Quality	Portland
Earnest Harrell, Maj. Gen.	U.S. Army Corps of Engineers, North Pacific Division	Portland
Paul Heikkila	Marine Extension Agent, Oregon State University	Corvallis
Wendy Herrett	Siuslaw National Forest, U.S. Forest Service	Corvallis
Bob Hissong	Umpqua Fishermen's Association	Roseburg
Russell Hoeflich	The Nature Conservancy	Portland
Blair Holman	Georgia-Pacific Corporation	Coos Bay
Tom Holt	Willamette Industries	Albany
Howard Horton	Fish & Wildlife Department, Oregon State University	Corvallis
Don Hull	Director, Oregon Department of Geology and Mineral Industries	Portland
Truscott Irby	Oregon Association of Conservation Districts	Salem
Jack Kanalz	Soil Conservation Service	Portland
Andy Kerr	Oregon Natural Resources Council	Eugene
Paul Ketchum	Audubon Society of Portland	Portland
Pete Klingeman	Oregon State University	Corvallis
Richard Kosesan	Oregon Sheep Growers' Association	Salem
Joe Koziol	Salmon Trout Enhancement Program Advisory Board	West Linn
Jim Krahn	Oregon Dairy Farmers Association	Portland
Sue Kuppilas	Commissioner, Jackson County	Medford
Mark Labhart	Oregon Department of Forestry and STEP Advisory Board	Tillamook
Robert Lackey	Environmental Agriculture Research Laboratory, Environmental Protection Agency	Corvallis
James Lannan	Hatfield Marine Science Center, Oregon State University	Newport
Bill Lansing	Menasha Corporation	North Bend
Nancy Leonard	Commissioner, Lincoln County	Newport
Ron Lethin	Pacific Fishery Management Council	Hammond
John Lowe	Regional Forester, U.S. Forest Service	Portland
Lynn Lundquist	Oregon Cattleman's Association	Portland
Mike Lunn	Supervisor, Siskiyou National Forest	Grants Pass

Name	Affiliation	City
Rocky Mahoney	Smith's Tackle	Grants Pass
Bob Mahaffey	Oregon Small Woodlands Association	Coos Bay
Neal Maine	Administrative School District #10	Seaside
Bob Malouf	Oregon State Sea Grant Program, Oregon State University	Corvallis
John McGhehey	Stimson Lumber	Forest Grove
Russ McKinley	Boise Cascade Corporation	Medford
Bill McNeil	Hatfield Marine Science Center, Oregon State University	Newport
Ken Messerle	Coos Soil & Water Conservation District	Coquille
Jim Metcalf	Confederated Tribes of Coos, Lower Umpqua-Siuslaw Indians	Coos Bay
Teresa Miller	Confederated Tribes of Siletz Indians	Siletz
Don Moisan	Oregon Dairy Farmers Association	Portland
Steve Morris	Old Mill Marina Resort, Inc.	Garibaldi
Dave Moskowitz	Northwest Steelheaders Association, Inc.	Milwaukie
Kay Moxness	Central Lincoln Public Utilities District	Newport
Quinn Murk	Oregon Small Woodlands Association	Newport
Jeff Ouderkirk	Oregon Shores Conservation Coalition	Newport
Polly Owen	Oregon Cattleman's Association	Portland
Martha Pagel	Director, Oregon Water Resources Department	Salem
Steve Pennington	Marshfield High School	Coos Bay
Steve Peterson	Director, Oregon Economic Development Department	Salem
Marvin Plenert	U.S. Fish & Wildlife Service	Portland
Pete Powers	Oregon Charterboat Association	Newport
Jay Rasmussen	Director, Oregon Coastal Zone Management Association, Inc.	Newport
Peg Reagan	Commissioner, Curry County	Gold Beach
Tom Robinson	Oregon Salmon Commission	Newport
Joe Rohleder	Oregon Coast Guides & Packers Association	Waldport
Doug Robertson	Commissioner, Douglas County	Roseburg
Jim Rombach	Weyerhaeuser Company	Springfield
Gordon Ross	Commissioner, Coos County	Coquille
Paul Rudinsky	Diamond Hardwood	Eugene
Harold Russell	Oregon Cranberry Alliance	Bandon
Rollie Schmitten	Regional Director, National Marine Fisheries Service	Seattle, WA
James Sedell	U.S. Forest Service/Oregon State University	Corvallis
Bill Shake	U.S. Fish & Wildlife Service	Portland
Tom Simmons	WaterWatch of Oregon	Portland
Hans Smith	Crater High School	Central Point
Rick Sohn	Sun Studs	Roseburg
June Spence	Commissioner, Port of Astoria	Astoria
Glen Stonebrink	Oregon State Agricultural Stabilization and Conservation Service	Portland
Sam Stovall	Rogue Flyfishers	Ashland
Jim Tate	Depoe Bay Charterboat Association	Depoe Bay
Wilbur Ternyik	Mayor, City of Florence and Commissioner Port of Siuslaw	Florence
Larry Tuttle	Wilderness Society	Portland
Robert Turner	Director, Washington Department of Fisheries	Olympia, WA
Jeff Vanderkley	Manager, Salmon Harbor	Reedsport

Name	Affiliation	City
Frank Warrens	Pacific Fishery Management Council	Portland
Jim Welter	Oregon South Coast Fishermen	Brookings
Keith Wilkinson	Troll Fishermen	Coquille
Chuck Willer	Coast Range Association	Newport
John Wilson	Independent Troll Fishermen of Oregon	Gold Beach
Van Wilson	Oregon Water Resources Council	Salem
Bob Zagorin	Oregon Coast Guides & Packers Association	Eugene

Oregon Congressional delegates, state legislators from affected districts, and other interested legislators.

APPENDIX B

APPENDIX B

Coastal Salmonid Restoration Initiative

Participants

Name	Affiliation	City
Pat Allen	Congressman Mike Kopetski's office	Salem
Dave Anderson	Oregon Dept. Fish & Wildlife (ODFW)	Corvallis
Bruce Andrews	Director, Oregon Dept. of Agriculture	Salem
Rick Applegate	Northwest Power Planning Council	Portland
Ward Armstrong	Director,Oregon Forest Industries Council	Salem
Don Bacon	Manager, Port of Garibaldi	Garibaldi
Larry Bacon	Eugene Register Guard	Florence
Ken Bailey	Oregon Farm Bureau Federation	Salem
Bill Bakke	Oregon Trout	Portland
Jeff Barnard	The Associated Press	Grants Pass
Peter Barnhisel	Commissioner, ODFW	Corvallis
Caroline Bauman	Coast Range Association	Yachats
Bill Beers	Oregon Department of Corrections	North Bend
Tom Bennett	Lincoln City News-Guard	Lincoln City
Jim Bergeron	Oregon State University (OSU), Marine Extension	Astoria
David Bernard	KEZI-TV	Eugene
Rich Berry	ODFW	Portland
Pete Bisson	Weyerhaeuser Company	Tacoma
Gary Blanchard	Starker Forests	Corvallis
Don Bodenmiller	ODFW	Newport
Patrick Bohannon		Blodgett
Burnie Bohn	ODFW	Portland
Scott Boley	Oregon Salmon Commission	Gold Beach
C.O. Boots	Salmon Trout Enhancement Program (STEP)	Bandon
Remy Boots	Bay Area Chamber of Commerce	Bandon
Fred Borngasser	Commissioner, Josephine County	Grants Pass
Daniel Botkin	Director, The Center for the Study of the Environment (CSE)	Santa Barbara, CA
Dan Bottom	ODFW	Corvallis
L.B. Boydstun	California Dept. Fish & Game	Sacramento, CA
Paul Boyer	Lincoln County School Dist.	Newport
Bill Bradbury	Senator, District 24	Bandon
John Bragg	Pacific Coast News and Pacific Fishing Magazine	Corvallis
Cameron Brandt	National Fisherman	Portland
Eric Braun	U.S. Army Corps of Engineers (USACE)	Portland
Jerry Briggs	Oregon Guides & Packers Assoc.	Grants Pass
Kay Brown	ODFW	Portland
George Brown	Dean of Forestry, OSU	Corvallis
James Brown	State Forester, Oregon Department of Forestry (ODOF)	Salem

Name	Affiliation	City
Mack Brown	South Coast Lumber Company	Brookings
Rich Brown	National Wildlife Federation	Portland
Robin Brown	ODFW	Newport
Bob Buckman	ODFW	Seaside
Stephanie Burchfield	ODFW	Portland
Dorsey Burger	OSU	Corvallis
Chuck Burley	Nortwest Forestry Association	Portland
Elizabeth Starker Cameron	Starker Forests	Corvallis
John Capell	KMTR-TV/KMTF-TV	Coos Bay
Jane Capizzi	Izaak Walton League	Corvallis
Liza Capizzi	Lincoln Soil & Water Conservation District	Corvallis
Ken Carlisle	Salmonid Foundation	Tigard
Jim Carr	Menasha Corporation	North Bend
Susan Castillo	KVAL-TV	Eugene
Don Christensen	Oregon Charterboat Association	Newport
John Christie	Oregon Small Woodlands Association	Astoria
Jim Clarke	Weyerhaeuser Company	North Bend
Joe Cone	OSU, Oregon Sea Grant	Corvallis
Lee Coonce	Supervisor, Umpqua National Forest, U.S. Forest Service (USFS)	Roseburg
Pat Corcoran	OSU, Dept. of Agriculture & Resource Economics	Corvallis
Jim Cornelius	OSU, Dept. of Agriculture & Resource Economics	Corvallis
Bryan Cornell	More Logs	Corvallis
Russ Crabtree	Manager, Port of Brookings Harbor	Brookings
Dennis Creel	Hampton Lumber/Willamina Lumber	Willamina
Joan Criswell	Representative Hedy Rijken's office	Yachats
Michael Crouse	Bureau of Land Management (BLM)	Portland
Alan "Chip" Dale	ODFW	Portland
Shannon Davis	The Research Group	Corvallis
Doug Dehart	ODFW	Portland
Jonathan Denike	South Slough National Estuarine Research Reserve	Charleston
Jim Denison	Oregon Small Woodlands Association	Toledo
Carl Densmore	Oregon Tourism Council	Bandon
Charley Dewberry	Oregon Rivers Council	Eugene
Bruce Deyoung	OSU, Oregon Sea Grant	Corvallis
Steve Dickerson	Diamond Hardwood Products	Eugene
Ray Doerner	Director, Oregon & California Counties	Roseburg
Jana Doerr	Congressman Peter DeFazio's office	Coos Bay
Bob Doppelt	Director, The Oregon Rivers Council	Eugene
Jerry Dove	Commissioner, Tillamook County	Tillamook
Peter Dygert	National Marine Fisheries Service	Seattle
Howdy Eddleman		Newport
Paul Engelmeyer	Wilderness Society	Yachats
Tony Faast	ODFW	Portland
Joe Ferguson	Steamboaters Association	Springfield
Carmel Finley	The Oregonian	Toledo
Randy Fisher	Director, ODFW	Portland
Elizabeth Foster	Congressman Mike Kopetski's office	Salem
Susan Foster	Commissioner, ODFW	Gresham
Elizabeth Frenkl	Oregon Sierra Club	Corvallis
Connie Frisch	USFS, Waldport Ranger District	Waldport

Name	Affiliation	City
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Jim Furnish	USFS, Siuslaw NF	Corvallis
Bob Garrison	ODFW	Corvallis
Mike Gaul	Oregon International Port of Coos Bay	Coos Bay
Jim Gladson	ODFW	Portland
Rebecca Goggans	ODFW	Corvallis
Leonard Gondek	Roseburg Lumber	Roseburg
Mike Graybill	South Slough National Estuarine Research Reserve	Charleston
Stan Gregory	OSU, Dept. Fisheries & Wildlife	Corvallis
Gary Gustafson	Director, Oregon Division of State Lands	Salem
Jim Habberstad	Commissioner, ODFW	The Dalles
Rick Haliburton	Chairman, Oregon Cranberry Alliance	Bandon
Bill Hall	KNPT-KYTE Radio	Newport
David Hankin	Marine Lab, Humboldt State University	Trinidad, CA
Paul Hanneman	Oregon Fish Forever, Inc.	Cloverdale
Fred Hansen	Director, Oregon Department of Environmental Quality (DEQ)	Portland
Richard Hansen	Fly Fishing Federation	Corvallis
Ann Hanus	ODOF	Salem
Bill Hastie	ODFW	Newport
Paul Heikkila	OSU, Marine Extension	Coquille
Dave Heller	USFS	Portland
Jim Hill	Clatsop Economic Development Committee	Astoria
Bob Hissong	Umpqua Fishermen's Association	Roseburg
Russell Hoeflich	The Nature Conservancy	Portland
Tom Holt	Willamette Industries	Albany
Bob Hooton	ODFW	Portland
Howard Horton	OSU, Dept. Fisheries & Wildlife	Corvallis
Bob House	BLM	Salem
Eldon Hout	Oregon Department of Land Conservation and Development (DLCD)	Portland
Don Hull	Director, Oregon Dept. Geology and Mineral Industries	Portland
Onno Husing	Husing Land Use Consulting Services	Seal Rock
Steve Jacobs	ODFW	Corvallis
Bob Jacobson	Commission Chairman, ODFW	Newport
Mick Jennings	ODFW	Portland
Wittier Johnson	Washington Department of Fisheries	Olympia, WA
Roger Jolma	Salmon for All	Clatskanie
Tim Josi	Representative, District 3	Bay City
Victor Kaczynski		Tigard
Rod Kaiser	ODFW	Newport
George Kautsky	Hoopa Valley Tribe	Hoopa, CA
Andy Kerr	Oregon Natural Resources Council	Portland
Paul Ketchum	Director, Audubon Society of Portland	Portland
Frank King	Statesman-Journal	Otis
Mike Kopetski	Congressman, District 5	Salem
Larry Kraft	Oregon State Police	Salem
Becky Kreig	Deputy Director, Oregon Water Resources Department (WRD)	Salem
Gary Krum	Tillamook Guides Association	Tillamook

Name	Affiliation	City
Jeff Kruse	Oregon Association of Conservation Districts	Roseburg
Mark Labhart	STEP Advisory Board	Tillamook
Pierre Labossiere	Newport News-Times	Newport
Robert Lackey	Environmental Protection Agency (EPA)	Corvallis
Gabriella Lang	Oregon Economic Development Department (OEDD)	Salem
Pete Lawson	ODFW	Newport
Donavin Leckenby	ODFW	Portland
Nancy Leonard	Commissioner, Lincoln County	Newport
Stewart Lewack	Congressman Peter DeFazio's office	Washington, DC
Lynn Lomax		Eugene
Dave Loomis	ODFW	Roseburg
Harry Lorz	ODFW	Corvallis
Roy Lowe	U.S. Fish and Wildlife Service (USFWS)	Newport
Lynn Lundquist	Oregon Cattlemen's Association	Powell Butte
Mike Lunn	Supervisor, Siskiyou NF, USFS	Grants Pass
Bob Mahaffey	Oregon Small Woodlands Association	Coos Bay
Neal Maine	Adminstrative School District #10	Seaside
Bob Malouf	Director, Oregon Sea Grant Program, OSU	Corvallis
Mark Manion	ODFW	Portland
Don Mann	OEDD	Portland
Tim Markwell	Congresswoman-elect Elizabeth Furse's office	Portland
George Marshall		South Beach
Tim Marshall	Tillamook Guides Association	Tillamook
Jim Martin	Chief of Fish Division, ODFW	Portland
Bill Maxom	USFWS	Portland
John McGehey	Simpson Timber Company	Forest Grove
Joe McGurrin	Trout Unlimited	Vienna, VA
Don McIssac	ODFW	Portland
George McKibbon	Stimson Lumber Company	Tillamook
Russ McKinley	Boise Cascade Corporation	Medford
Shun McKinney	Waldport RD, USFS	Waldport
Barry McPherson	ODFW	Portland
Mark Meleason	The Center for the Study of the Environment	Portland
Bud Miles	Commissioner, Port of Siuslaw	Florence
Mike Miller	Associated Oregon Loggers	Salem
Mac Mills	Steamboaters Association	Idlewlyd Park
George Moffet	Middle Rogue Chapter, Northwest Steelheaders Association	Grants Pass
Dorothy Moody	Oregon Shores Conservation Coalition	Depoe Bay
Tom Moreland	Lincoln City News-Guard	Lincoln City
Steve Morris	Old Mill Marina Resort, Inc.	Garibaldi
Dave Moskowitz	Northwest Steelheaders Association	Milwaukie
Kay Moxness	Central Lincoln Public Utility Dist.	Newport
Steve Moyer	Trout Unlimited	Vienna, VA
Jim Myron	WaterWatch of Oregon	Canby
Willa Nehlsen	The Oregon Rivers Council	Eugene
Jay Nicholas	ODFW	Corvallis
Tom Nickelson	ODFW	Corvallis
Ray Nolan	Cape Arago Audubon Society	North Bend
J. Diane Oliver	OSU, Extension Sea Grant/University of Oregon, Dept. Land Architect	Eugene
Mike Orcutt	Hoopa Valley Tribe	Hoopa, CA
Martha Pagel	Director, WRD	Salem

Name	Affiliation	City
Dave Patterson	Soil Conservation Service	Portland
Dick Patton	Georgia-Pacific Corporation	Toledo
Bill Pearcy	OSU, School of Oceanography	Corvallis
Steve Pennington	Marshfield High School	Coos Bay
Ron Phillips	Mo's	Newport
John Platt	Congresswoman-elect Elizabeth Furse's office	Hillsboro
Tom Poe	USFWS, National Fishery Research Center	Cook, WA
Mary Potter	ODFW	Portland
Pete Powers	Oregon Charterboat Association	Newport
Marc Prevost	Rogue Valley Council of Governments	Central Point
Hans Radtke		Yachats
Bob Rafalovich	Grants Pass Chamber of Commerce	Grants Pass
Eric Rasmussen		Toledo
Jay Rasmussen	Director, Oregon Coastal Zone Management Association (OCZMA)	Newport
John Rayburn	Port of Newport	Newport
Peg Reagan	Commissioner, Curry County	Gold Beach
Fran Recht	Pacific States Marine Fisheries Commission	Depoe Bay
Gordon Reeves	USFS	Corvallis
Paul Reimers	ODFW	Charleston
Reg Reisenbichler	National Fishery Research Center, USFWS	Seattle, WA
Bruce Rettig	OSU, Dept. Agriculture & Resource Economics	Corvallis
Hedy Rijken	Representative, District 4	Newport
Barbara Roberts	Governor, State of Oregon	Salem
Bill Roberts		Eugene
Tom Robinson	Manager, Oregon Salmon Commission	Newport
Joe Rohleder	Oregon Coast Guides & Packers Association	Waldport
Lars Robison	Dockside Charters	Depoe Bay
Gordon Ross	Commissioner, Coos County	Coquille
M. Sanchez	KOIN-TV	Portland
Greg Satchell	OEDD	Salem
Susan Saul	USFWS	Portland
Andy Schaedel	DEQ	Portland
Cynthia Schneider		Yamhill
Mark Schneider		Yamhill
Phil Schneider	Commissioner, ODFW	Portland
Peter Schoonmaker	Ecotrust	Portland
Carl Schreck	OSU, Dept. Fisheries & Wildlife	Corvallis
Fred Schutt	Commissioner, Port of Brookings Harbor	Brookings
Walter Schutt	ODOF	Salem
James Sedell	USFS	Corvallis
Dick Severson	OEDD	Eugene
Bill Shake	USFWS	Portland
Jean Shaffer		Monmouth
Cordelia Shea	DEQ	Portland
Frank Simmons	Confederated Tribes of Siletz Indians	Siletz
Hans Smith	Crater High School	Central Point
J. Gary Smith	NMFS	Seattle, WA
Rick Sohn	Sun Studs, Inc.	Roseburg
Larry Sowa	Representative, District 26	Oregon City
Glen Spain	Pacific Coast Federation of Fishermen's Association	Eugene

Name	Affiliation	City
Anne Squier	Governor's Assistant for Natural Resources	Salem
James Stengle		Seal Rock
Dave Stere	Oregon Department of Forestry	Salem
Gene Stewart	ODFW	Newport
Scott Stouder	Gazette Times	Corvallis
Jim Tate	Depoe Bay Charterboat Association	Depoe Bay
Ron Taves	Yachats Fish Enhancement	Yachats
Willie Tiffany	Congressman Mike Kopetski's office	Salem
Steve Trask	Bio Surveys	Alsea
Michael Unsworth	OSU, Center for Analysis of Economic Change	Corvallis
Tim Unterwegner	ODFW	Gold Beach
Leonard Van Cruder	Commissioner, Port of Siuslaw	Florence
Jeff Vanderkley	Salmon Harbor	Winchester Bay
Jim Van Loan	Commissioner, ODFW	Steamboat
Charles Voss	Salmonid Foundation	Woodland, WA
Robin Waples	NMFS	Seattle, WA
Frank Warrens	Pacific Fishery Management Council	Portland
Harold Weeks	ODFW	Portland
Jim Welter	Oregon South Coast Fishermen	Brookings
Bob Wernick	KVAL-TV	Eugene
Don Whereat	Confederated Tribes of Coos, Lower Umpqua-Siuslaw Indians	Coos Bay
Keith Wilkinson	Klamath River Task Force	Coquille
Chuck Willer	Director, Coast Range Association	Newport
John Williams	BLM	Washington, DC
Bob Willis	Portland District, USACE	Portland
John Wilson	Independent Troll Fishermen of Oregon	Gold Beach
Dennis Wise	ODFW	Clackamas
Ron Yockim	Law Offices of Cegavske, Johnston & Assoc.	Roseburg
Georgia York	OCZMA	Newport
Lynn Youngbar	Rural Development Initiatives, Inc.	Redmond
Ron Zagorin	Oregon Coast Guides & Packers Assoc.	Eugene
Jill Zarnowitz	Chief of Habitat Conservation Division, ODFW	Portland

APPENDIX C

APPENDIX C

Coastal Salmonid Restoration Initiative

Background Information on Panel Participants

Welcome, Purpose, Structure and Procedures

Bill Bradbury is a video producer from Bandon and an Oregon state senator representing much of the southern Oregon coast. He is currently Senate Majority Leader in the Oregon Legislature and co-chair of the Ways and Means Committee. Bradbury is a founding member of the Pacific Fisheries Legislative Task Force - comprised of legislators from Alaska, Idaho, Washington, Oregon and California.

Anne Squier is the Senior Natural Resource Policy Advisor to Governor Barbara Roberts. Squier has a J.D, with an undergraduate degree in biology. She has served on the Land Conservation and Development Commission, the Environmental Quality Commission, and was Assistant Attorney General (1984-89) in the Natural Resources Section of the Oregon Justice Department.

Jay Rasmussen is director of the Oregon Coastal Zone Management Association (OCZMA) and holds a M.S. from Utah State University. OCZMA is an organization of coastal counties, cities, ports, and soil and water conservation districts that is involved in coastal research and facilitating resolution of conflicting coastal issues.

A Continually Pressing Problem: The Need for a New Approach to Salmonids

J. Gary Smith is director for regional operations for the Northwest Region of the National Marine Fisheries Service. He administers federal programs for marine and anadromous fish in nine western states, including responsibility for protecting coastal and inland anadromous fish habitats and endangered species. Smith is the past director of marine advisory/extension services for California State University-Humboldt and holds a B.A. from California State University-San Jose.

Meeting Multiple Expectations - Panel

- **Coastal Economics and Salmon**

Hans Radtke is a free-lance economist specializing in resource and regional economics. He received his Ph.D. from Oregon State University in 1972, worked for the University of Nevada-Reno until 1978, and presently serves as a resource economic consultant for public agencies and private industries. For the last 12 years, he has lived on Tenmile Creek south of Yachats, Oregon.

- **Community Impacts**

Lynn Youngbar is Executive Director of Rural Development Initiatives, Inc., a non-profit organization that provides economic assessments in strategic planning and technical assistance to rural Oregon communities. She holds a B.S. degree

in sociology from Portland State University and a Masters in City Planning from the Massachusetts Institute of Technology.

▸ **The Needs of Those Who Fish**

Tom Robinson is manager of the Oregon Salmon Commission - a seafood commodity commission under the Oregon Department of Agriculture. He serves on numerous review and advisory committees regarding salmon, and is involved in salmon restoration and production efforts on behalf of the Commission. Robinson holds a B.A. degree from Pacific Lutheran University.

▸ **Interactions with Other Needs and Views**

Anne Squier

Description and Status of Oregon Coastal Anadromous Salmonids - Panel

▸ **Comparative Life-Histories of Species**

Jay Nicholas is a specialist in salmonid life history and stock status with the Oregon Department of Fish and Wildlife. He holds a M.S. from Oregon State University in fisheries and wildlife. A 16-year veteran with ODFW, he has worked on many fishery issues - including wild trout studies, coastal salmon ecology, and coastal chinook management planning.

▸ **Freshwater Habitat Requirements**

Tom Nickelson has been a research biologist with the Oregon Department of Fish and Wildlife since 1974. He is presently program leader of the freshwater production studies. Nickelson's principal areas of research include population biology, habitat requirements, and the use of hatchery coho salmon (particularly for supplementation). He holds a M.S. in fisheries from Oregon State University.

▸ **Status and Potential of Natural Production**

Steve Jacobs is a research project leader with the Oregon Department of Fish and Wildlife responsible for conducting studies to assess the status of coastal salmon populations - including coordinating coastal spawning ground surveys as well as conducting special studies to improve inventory methods. With ODFW for ten years, Jacobs holds a M.S. in fisheries biology from Oregon State University.

▸ **Hatchery Supplementation**

Rich Berry is director of the fish propagation program for the Oregon Department of Fish and Wildlife where he directs and supervises ODFW's fish hatchery program. With ODFW for 24 years, Berry's experience includes work on coastal bays and streams, and the Salmon Trout Enhancement Program (STEP). He has a B.S. in fisheries from Humboldt State College.

▸ **Harvest**

Don McIsaac is salmon fishery manager for the Oregon Department of Fish and Wildlife where he supervises ODFW's Columbia River and ocean management programs. He chairs the Klamath Fishery Management Council and is a member of the United States delegation to the Pacific Salmon Commission (southern panel). McIsaac holds a Ph.D. from the University of Washington with an emphasis on salmon ecology.

▸ **Marine Influence on Survival**

Bill Pearcy is emeritus professor of oceanography at Oregon State University (OSU). He has conducted extensive research on marine resources, including studies of oceanic conditions, ocean surveys of juvenile salmonids, and ocean productivity. Pearcy has a Ph.D. in biology from Yale University and has been with OSU since 1960. He just completed *Ocean Ecology of North Pacific Salmonids* for the University of Washington.

Factors Potentially Limiting Natural Production - Panel

▸ **Spawning Habitat**

Gordon Reeves has been a research fish biologist with the USDA Forest Service's Pacific Northwest Research Station in Corvallis, Oregon, since 1984. His research emphasis has been on the ecology of juvenile anadromous fish and on the influences of land-management activities and landscape level influences on these salmonids. Reeves has a Ph.D. from Oregon State University.

▸ **Rearing Habitat**

Pete Bisson is an aquatic biologist in the Environmental Forestry Research Group for Weyerhaeuser in Tacoma, Washington. His research interests include stream habitat analysis, factors limiting the production of salmon and trout, and the biodiversity of fishes in forested streams. Bisson is on the affiliate staff of the Center for Streamside Studies at the University of Washington and holds a Ph.D. from Oregon State University.

▸ **Marine and Estuarine Habitat**

Dan Bottom has been a research biologist with the Oregon Department of Fish and Wildlife since 1977. He is the fisheries research project leader in charge of various marine, estuarine, and freshwater planning studies - including those on the marine and estuarine ecology of juvenile salmon. He has a M.S. degree from the College of Marine Studies at the University of Delaware.

▸ **Predators**

Robin Brown is the Marine Region nongame program coordinator for the Oregon Department of Fish and Wildlife, and leader of the marine mammal project. He has extensive experience in the area of marine mammal biology and has studied seal and sea lion abundance, distribution, food habits and interactions with fisheries in California, Oregon and Washington. He holds a M.S. in oceanography from Oregon State University.

Roy Lowe is a 15-year veteran with the U.S. Fish and Wildlife Service (including seven years in Newport, Oregon) as a wildlife biologist for the Coastal National Wildlife Refuges. He is responsible for monitoring seabirds, waterfowl, wetlands, and threatened and endangered species. He holds a B.S. from Humboldt State University with a specialty in ornithology.

Tom Poe has been a fishery researcher with the U.S. Fish and Wildlife Service for 15 years. For the last seven years he has designed and directed studies to determine the significance of predation by resident fishes on emigrating juvenile salmonids in the Columbia and lower Snake Rivers. He earned a Ph.D. in fishery science from Cornell University, and he is a member of the Department of Fisheries at Humboldt State University.

▸ **Harvest**

David Hankin is professor of fisheries at Humboldt State University with interests in population dynamics, fishery management, and sampling theory. He was co-leader of the Chinook salmon planning team for the Oregon Department of Fish and Wildlife from 1985 to 1987, and holds a Ph.D. in fishery science from Cornell University.

▸ **Hatchery Fish**

Reg Reisenbichler is with the National Fishery Research Center in Seattle where he designs and conducts research on the population ecology of anadromous salmonid and endangered species of the western United States. Since 1976, the integration of natural and artificial production of anadromous salmonids has been one of his study areas. Reisenbichler has a Ph.D. in fishery biology from the University of Washington.

▸ **Commentary**

Victor Kaczynski has 24 years experience as a certified fisheries scientist with broad knowledge of salmon fishery issues. He began as an assistant professor at the University of Washington studying the early marine life of pink and chum salmon, and possible food limitations for hatchery released salmon in Puget Sound. A consultant to government agencies and industries, Kaczynski holds a Ph.D. from Cornell University.

Peter Dygert presently works for the National Marine Fisheries Service where he is responsible for coordinating biological consultations for harvest activities under the Endangered Species Act. He previously worked as a harvest management biologist for tribal interests regarding ocean and Puget Sound fisheries. Dygert has a Ph.D. in fisheries from the University of Washington.

Opportunities to Improve Natural and Hatchery Production - Panel

▸ **Watershed Management**

Jack Williams is fisheries program manager for the Bureau of Land Management, Washington, D.C. His previous experience includes serving as an endangered species biologist with the U.S. Fish and Wildlife Service in Sacramento, and as a visiting scholar in the Department of Fisheries and

Wildlife at the University of California, Davis. He holds a Ph.D. in fisheries science from Oregon State University.

▸ **Hatchery Fish Management for Multiple Interests**

Paul Reimers is the Coos-Coquille Fish District Biologist for the Oregon Department of Fish and Wildlife. He has been actively involved in the operations of ODFW's fish hatcheries and in the development of hatchery programs that are compatible with the natural production of wild stocks of coho salmon, winter steelhead, and fall chinook salmon. Reimers has a Ph.D. in fisheries from Oregon State University.

▸ **Ocean and Terminal Fishery Concepts**

Scott Boley is a commercial salmon fisherman residing in Gold Beach, Oregon. He is a member of the Pacific Fishery Management Council, the Oregon Salmon Commission, the Port of Gold Beach, and the Curry Anadromous Fishermen (STEP) group. He is also a member of the Oregon Department of Fish and Wildlife's commercial fishery advisory committee, and holds a M.S. in ocean engineering from Oregon State University.

▸ **Wild Stock Transfers**

Robin Waples is a geneticist and head of the endangered species project for the National Marine Fisheries Service. With a Ph.D. in marine biology from Scripps Institute of Oceanography, his research interests include application of the Endangered Species Act to Pacific salmon, genetic conservation of salmon populations, genetic interactions between hatchery and wild fish, and mixed stock fishery analysis.

▸ **Overview of Opportunities**

Jim Martin is the Oregon Department of Fish and Wildlife's Assistant Director in charge of the Fish Division. He has been with ODFW for 23 years in the areas of fisheries research, habitat management, harvest management, and various levels of public administration in the Fish Division. Martin has a M.S. in fisheries and biometrics from Oregon State University.

Keynote Address: Governor Barbara Roberts

APPENDIX D

APPENDIX D

Coastal Salmonid Restoration Initiative

Background Documents and Displays

Documents

Hovee, E.D. 1992. Strengths, weaknesses, opportunities and threats (SWOT) analysis for Garibaldi, Oregon. Prepared for Rural Development Initiatives, Inc., Redmond.

Hovee, E.D. 1992. Strengths, weaknesses, opportunities and threats (SWOT) analysis for Depoe Bay, Oregon. Prepared for Rural Development Initiatives, Inc., Redmond.

Lawson, P.W. 1992. Cycles in ocean productivity, trends in habitat quality, and the restoration of salmon runs in Oregon. Oregon Department of Fish and Wildlife, Portland.

Nickelson, T.E., J.W. Nicholas, A.M. McGie, R.B. Lindsay, D.L. Bottom, R.J. Kaiser, and S.E. Jacobs. 1992. Status of anadromous salmonids in Oregon coastal basins. Oregon Department of Fish and Wildlife, Portland.

Oregon Department of Fish and Wildlife (Berry, R.L., and R.L. Garrison). 1992. Fish propagation program (a compilation of graphs summarizing ODFW and private hatchery programs). Oregon Department of Fish and Wildlife, Portland.

Oregon Department of Fish and Wildlife (Gladson, J.L.). 1992. Coastal salmonid initiative: Backgrounder (a summary of Nickelson, et. al. 1992). Oregon Department of Fish and Wildlife, Portland.

Oregon Department of Fish and Wildlife (McPherson, B.P.). 1992. Factors potentially limiting natural production of Oregon coastal salmonids (a summary of presentations given by the conference panel of the same title). Oregon Department of Fish and Wildlife, Portland.

Oregon Department of Fish and Wildlife (Ocean Salmon Management Program Staff). 1992. Contribution to fisheries for Oregon coastal coho and chinook stocks: An information supplement to the Coastal Salmonid Restoration Initiative Conference. Oregon Department of Fish and Wildlife, Portland.

Oregon Department of Fish and Wildlife (Reimers, P.E., and M. Manion). 1992. The winter-habitat part of the problem with coho salmon. Oregon Department of Fish and Wildlife, Portland.

Oregon Department of Fish and Wildlife (Wise, D.L.). 1992. Salmon-Trout Enhancement Program: An introduction. Oregon Department of Fish and Wildlife, Portland.

Radtke, H., and The Research Group. 1992. Economic contribution of salmon to Oregon's coastal communities. Prepared for Oregon Coastal Zone Management Association, Newport.

Robinson, T. 1992. Oregon coastal fishing industry prespectives: the status of public salmon fishing on the Oregon coast; needs goals and expectations of those who fish; and proposals for action. Prepared for Oregon Coastal Zone Management Association, Newport.

Displays

Oregon Department of Fish and Wildlife:

Geographic Information System (GIS)
Donavin Leckenby and Milton Hill

Salmon-Trout Enhancement Program (STEP)
Dennis Wise

Ocean Salmon Management Program
Rod Kaiser and Eric Schindler

Oregon Department of Fish and Wildlife and Oregon Department of Corrections:

Coho Winter-Habitat Restoration Effort
Paul Reimers and Mark Manion (ODFW) and Bill Beers (ODC)

APPENDIX E

APPENDIX E

Coastal Salmonid Restoration Initiative

Working Group Brainstorming Lists

Habitat Protection, Restoration and Enhancement

- Under-utilized habitat - why?
- One entity responsible for a watershed
- Identify and protect best remaining habitats
- Take ecosystem approach to managing watersheds
- Develop a better, broader model of fish/habitat/other species interactions
- Conduct more quantitative assessment of habitat availability and quantity
- Do an EIS process prior to approval of projects in fish watersheds, including cumulative impacts analysis and restoration plan
- Conduct biological inventory to determine capacity before choosing projects
- Start with a watershed/ecosystem approach (temporal/spatial/trophic/taxonomic), then step down to biological and other inventories
- Seek incentives (tax credits, etc.) to restore habitat
- Work with STEP Program - point in right direction - increase number of STEP biologists to utilize more volunteers
- Riparian tax incentive - existing ODFW program. Farmers fear of losing access - show them how it works for them
- Develop education program regarding salmon values, etc., to get public support and funding
- Determine *relative* benefits between different projects/solutions
- Voluntary tax return check-off for salmon restoration
- Highest priority to wild, not hatchery stocks in decisions and allocation of funds
- Need good coordination - get buy-in and cooperation
- Habitat inventory is expensive and slow. Tool needs refinement
- Need state Agricultural Practices Act to deal with private agricultural lands
- Make sure science is accurate, up to standards, and defensible in court
- Need mechanisms of accountability - adults? juveniles?
- Ensure that healthy areas remain - focus restoration funds on this first
- Adopt an "After the Flood" policy - how to "repair" after flood
- Maintain management opportunities. Restore ecological functions and values from head of water to estuary
- Adopt management prescriptions that maintain historic condition upon which salmon evolved
- Watershed approach - coordination for each watershed
- Prioritize watersheds for restoration
- Encourage development of impoundments
- Stop or modify actions causing irreversible harm
- Understand historical conditions and processes
- Open state-funded watershed information center for computer databases on watershed basis
- Find incentives to remove tidegates
- Gravel removal impacts
- Identify migration barriers and funding to remove them
- Start acting on what we *do* know now

- Review and modification of Wild Fish Policy
- Find way to buy/lease water rights for instream flows - through water use fee
- Hire more field/extension biologists
- Get more information out to small landowners. Simple plans
- Regionalize ODFW
- What are private landowners' liabilities for floods/blow-outs? Need protection
- Simple education programs so folks understand effects of their actions
- Need common priority list of what's most important, and common base of expertise
- Set aside pieces of watersheds (e.g., in Siuslaw National Forest)
- Include landowners in the process. They're an information resource
- Identify desirable and minimum acceptable conditions
- Determine habitat needs - streamflows, allocation, etc.
- Use correctional folks to help do restoration projects
- Use educational system to train kids in monitoring
- Information is there - system is wrong. Do projects rather than continue redundant compiling
- Identify critical upslope habitats; then, timber trades or credits between private and public lands
- Restoration will cost money and can't be done by volunteers only
- Instream habitat projects should be seen as experimental - only do after watershed planning
- Need instream flow reservations for fish and wildlife
- Need statewide water conservation program
- Need regionwide (Alaska → California + ocean) database for all to access. Need reference system for all
- Continue existing correctional inmates work programs (e.g., Coos County)
- Find easier ways to utilize volunteers - coalition of groups, agencies, etc., to do training, logistics, etc.
- Improve relationships between agencies and landowners - not just "I want - you give"
- Give volunteers more responsibility - utilize better, including landowners
- *Invite* Cooperative Extension Service to get more involved in coordinating with varied groups and give *resources* to do it well - outreach
- Form partnerships to get things done. Co-manage basin(s) to get ownership of all groups - re-train
- Use CRMP - existing structure can form partnerships to get things done
- New statutes - place requirements on private/state/federal lands to get watershed planning on all lands - same protection of all lands
- Basin management will meet with far too much resistance - too big
- We've got 2-3 years - use bandaids; work with partnerships. No choice - need to work together
- Use Student Conservation Association to get workers
- Highest priority - focus on areas where species are in worst shape - on the brink
- Identify/define wild versus hatchery fish
- Use port districts to organize and have legislative power
- Doesn't make sense to have land out of production. Utilizing land maintains healthy economy to pay for restoration
- Create state Riparian Conservation Land Trust Tax - benefits to landowners for riparian set-asides
- Involve locals at start - what do they need to develop sustainable watershed and economy? Don't dictate to them. Respect for locals. Develop local respect for biologists
- Support legislative proposal for local watershed plans

- CRMPs: Realistic time frame
  Whole watershed
  Schedule for implementation
- Don't use California FPA as the model
- Where does Klamath River fit in? Part of two states
- Minimum goal: Produce 4 adults/2 spawners
  Long-term goal: Produce 6 adults/2 spawners
- Support Water Resources Department in new legislation for monitoring and reporting water use and additional enforcement people
- Look for ways to fund these projects
- Err on side of conservation. Give benefit of the doubt to fish
- Develop goals and objectives to protect organisms in watershed or face ESA
- Goal: double production in 10 years
- Emphasize rearing habitat
- Specific recommendations on land use management in watersheds - get action
- Screen water diversions - especially in Rogue River basin
- Savage Rapids Dam
- Consistent management within watersheds between agencies
- Return to productive habitat estuaries/salt marshes that were removed for marginal agriculture (per Libby Levee - USFWS)
- Larger no-cut stream buffer zones
- Cumulative effects - who else is taking fish?
- Oregon Department of Forestry's stream classification and protection measures

Hatchery Production

- Use hatchbox fish in same tributaries
- Implement Wild Fish Policy - as it pertains to hatcheries, release sites, etc.
- Egg recovery system - reward system to anglers to get live eggs to hatchery
- Clear purpose and goal for every hatchery:
  Restoration (hatchboxes)
  Supplementation
- De-emphasize quantity; emphasize quality
- Scale of hatchery - don't swamp wild fish
- Positive marking system for hatchery fish - ALL
- Mark like Alaska - inner ear (won't work for catch and release)
- Other visual marking - especially for ocean, river, hatchbox
- Need to look at purpose for marking
- Let public know what's going on
- Hatchery on every suitable stream (small) - develop criteria/cost-effective
- De-emphasize hatcheries - emphasize habitat and wild stocks
- Location of hatchery or release site
- Explore synergistic effect of hatchery and terminal fishery rather than mixed stock
- Emphasize economic costs and benefits from hatcheries - quality, gene pool, etc. (wild stock concerns). Use hatcheries positively
- ODFW look at budgets and priorities - use pro and con interests, users, and science
- More rigorous on budgeting -
  Compare cost/benefits
  Establish priorities from budget
- Team look at protocol -
  Risk analysis
  Scientific team

- Hatchery fish not factor in ESA - OK if neutral, not a substitute (Columbia River)
- Hatchery strategies go hand-in-hand with habitat restoration
- More priority on monitoring survival of hatchery production - including hatchbox
- Hatchery versus natural distinction may have effect on recovery (hatchery not equal to "conserve in native habitat")
- Use as bridge to recovery - jumpstart
- Re-define "hatchbox fish"
- Need consensus by all parties to avoid listing - rebuild weak stocks by scientifically viable means, (supplementation, large state hatcheries)
- Need hands-on activities/projects for volunteers to want to be involved
- How will NMFS define "hatchbox" or other hatchery systems?
- Need to be "wild" fish
- Don't always need to "jumpstart"
- Look at genetic consequences (procedure)
- Timeline critical in developing priorities
- Look at coast-wide gene conservation policy
- No stock transfers between basins
- Port district take responsibility for managing hatchery
- Habitat is long-term - need to maintain with hatchbox for short-term
- Take steps now to preserve genetic integrity (standard)
- Floodplain and estuary losses - won't get back. Need supplementation
- First priority: natural process. If not, consider jumpstart - look at NMFS change
- Tie hatchery goals to fishery goals and ESA goals
- Look at cooperative efforts (cost saving) - STEP, free help
- Define role of private hatcheries as possible contractors
- More restrictive regulations further upstream
- Mitigation where can't restore habitat
- Non-depredation zone around hatcheries
- Look at potential for interaction throughout life cycle
- Stray rates: Minimize
  Research
- Make best use of facilities we have (public and private) - compatible with Wild Fish Policy
- Research on minimum viable populations (fine tune PFMC process)

Harvest Management

- Determine specific capabilities and production of systems
- Harvest based on science
- Compensation package
- Secure information base through funding
- Eliminate mixed stock fisheries
- Clear, timely, and accurate information to media and public
- *Complete* inventory of fish (stream and ocean)
- Concentrate on STEP and maximize STEP functions
- Education - increase overall information on all factors
- Numerical spawning goals
- Publicize STEP to increase public involvement
- Get reliability into fishing seasons
- Redirect federal funding to *FISH*
- Establish timely emergency fishing regulations

- Harvest *only* surplus fish
- Identify critical stocks
- Quantify hooking mortality impacts
- Bycatch and other "lost" fish
- Look at harvest techniques
- Modify ESA - draw line for dropping as functionally extinct
- Evaluate fully marine mammal impacts on salmon
- Catch statistics
- Adipose-clip all hatchery fish - or other marking technique
- Improve "punchcard" system - attachable tags, 1 fish/1 tag
- Utilize public/charter catch information
- Rebate/incentives for returning "punchcards"
- Improve "punchcard" accountability of license vendors
- Salmon supplementation - i.e., net pens in marinas
- *Reverse* the trend on wild stocks - more than 1:1 replacement
- Consider renegotiating international treaties and fishing agreements
- Create more terminal fisheries
- Maintain sport fisheries - reallocation
- Sea-run cutthroat trout inventory - improve and complete database
- Reduce ocean-California-harvest of OCN
- Watershed approach to recovery
- Reduce and reallocate (short-term) annual harvest limit - until recovery
- Establish numerical spawning escapement goals for all streams and if not achieved, cut harvest FW and SW
- Compensation package may need to address all affected parties. Include sport fishermen
- Conservation management strategies to achieve numerical minimum spawning escapement goals
- Once spawning escapement is achieved, maintain harvest rate at replacement levels ($\approx$ 20% harvest rate)
- Mark all hatchery fish (coho) - need to generate studies on hooking mortality, marking effectiveness and mortalities
- Change fisheries structure from ocean mixed stock to terminal stock-specific fisheries (gillnets, seines, sorting weirs)
- Increase physical surveys - escapement, juvenile studies, marking mortalities, etc.
- Restrict non-catch harvest (i.e., mortality from habitat degradation, water diversions, etc.) of critical stocks
- Request the formation of a scientific recovery team to handle all present at-risk stocks
- Consider economic factors and impacts of strategies
- Use compensation package to hire fishermen to expand research
- Increase enforcement of existing restrictions - especially screening (also maintenance of screening) and other sources of problems

Biological Community Management

- Adjust human harvest levels of salmonids to account for marine mammal predation
- Improve biological health of our aquatic systems - water quality and quantity
- Improve access to biologist and numbers (information)
- Resolve whether or not marine mammals are a problem
- Resolve whether or not bass are a problem
- Meaningful cumulative impacts study - and methodologies

- Remove (rotenone) warm-water fish populations from Tenmile Lakes and stock with cold-water fish
- Define cumulative impacts of biological community management
- Accurately and honestly define choices and consequences
- Manage hatcheries so they don't create problem - predators or competitors (marking hatchery fish)
- Develop process for socially unacceptable ideas to be accepted
- Build sewage treatment plants
- Inventory and identify coastwide wild stocks
- Develop ecological management program with an ecological concept
- Inventory and identify shad populations
- Develop cost-share for land use practices (incentives)
- Share burden equally - involve urban communities in solutions
- Need public information and education
- Explore CRMP process
- Attempt to perceive what ecosystem would look like and develop ecological group to manage
- Accelerate effort to determine genetic differences of stocks
- Accountability
- Coast-wide inventory of fish-eating birds - related to hatchery populations
- Develop a process for long-term solutions to have effect (culminate)
- Recognize improvements that have been made
- Monitor land use effects on fish populations
- Pen rearing to allow other processes to work
- Develop protection strategies for stocks as they move above tidewater
- Have NMFS manage seals and sea lions on sound biological basis
- Evaluate harvest of other stocks and how they impact salmonid stocks
- Look at squawfish populations and how water temperature affects them
- Explore water policies
- Prioritize status of wild stocks based on threats to populations
- Optimize genetic diversity of wild stocks
- Develop a mechanism to protect wild stocks
- Restore estuarine/wetlands water quality
- Increase complexity of the habitat:
    - Reduce issue of predation
    - Create refuges from predation
- Clarify ways to protect seriously depressed stocks in severe predation situations - Legislative solution
- Protect upper reaches of stream systems from human predation of adult fish (harvest and other human impacts)
- Legislation to prevent collapse of biological community
- Develop good database on impacts of marine mammals

APPENDIX F

APPENDIX F

Coastal Salmonid Restoration Initiative

Working Group Proposed General Directions for Action

These proposed general directions for action were distilled from the working group brainstorming lists (Appendix E). From this distillation, the working groups developed the Proposed Restoration Strategies. This compilation of proposals does not indicate perfect consensus; however, the concept of partnerships and cooperation did have consensus of the participants.

Habitat Protection, Restoration and Enhancement

- Information (Acquire and exchange)

  Education programs (user groups, general public)
  Inventory of streams (habitat inventory, monitor populations, basin planning)
  Monitoring populations, parameters
  Evaluation
  Identify historic conditions
  Compile all existing data (gather current data for distribution and use rather than conduct more research - don't delay doing projects)

- Projects

  The discussion centered on the process by which projects would be determined:

  Remove migration obstacles
  Expand use of STEP program
  Develop impoundments
  Maintain stream flow
  Expand use of stream enhancement initiative
  Partnerships (work with landowners - cooperative effort)

- Legislation

  Incentives to implement practices
  Substitutes for forgoing traditional practices or activities as part of restoration program (trades or credits)
  Modify Wild Fish Policy
  Water rights acquisition
  Liability protection for restoration projects (possible damages from habitat improvement projects - floods, etc.)
  Ecosystem approach to watershed management
  Funding mechanisms

- Other

  Partnerships (interagency, interest groups, etc.)
  Volunteers
  Cooperative planning (CRMP)
  Extension assistance
  Outreach
  Continue use of existing worker programs (e.g, inmates, SCA)

Government Process or Recovery Process to Accomplish Goals

Concurrent Activities:

Itemize Government Process

- Watershed/ecosystem basis
- One lead entity per watershed
- Responsibility, accountability, evaluation
- Common statewide habitat priority list
- Common cadre of expertise (technical advice)
- Form partnerships to get things done
- Use existing government structure (CRMP)
- Identify incentive programs

Codify Process into Legislation with Funding (Federal $)

- Funding available as grants (via NMFS, USFWS) under approved recovery plan
- Implement recovery plan in watersheds and basins

Recovery Plan Approval by NMFS/USFWS

- Statewide coordinated priority (processes, goals, etc.)
- Form technical cadre (study teams)
- Identify lead entity for each watershed/basin

Implement Projects Under Approved Plan

- Long-term recovery program

Compile Existing Data

- State
- Federal
- Local
- Private

Identify Obvious High Priority Projects

- Implement immediately

Determine Immediate Funding for High Priority Projects

- State
- Federal
- Private

Phase Short-term Actions Into Long-term Legislative Program

Hatchery Production

UMBRELLA POLICY: Develop and implement purpose and goal(s) for every new or existing hatchery and hatchbox (rehabilitation/supplementation).

Desired Outcomes:

Rehabilitation:	Does no harm to candidate stock and may enhance recovery of natural production
Supplementation:	Does no harm to candidate stock and supplies fish to public fishery

Evaluation:

1. Cost effective?
2. Benefits for cultural purposes?
3. Timeline to meet biological goals?
4. Meets biological goals?
5. Monitoring standards exist?
6. Use of volunteers at existing facilities?

Solutions Included in Evaluation

- Mark every hatchery fish - investigate other marking options
- Egg recovery system to reward anglers for participation
- Make best use of the public and private facilities we have
- Keep compatible with Wild Fish Policy
- Be "smart" about the location of hatcheries, release sites, hatchboxes - provide public resource while targeting species that may be in trouble
- Emphasize economic costs and benefits from hatcheries - use hatcheries in a positive way
- Include use of volunteers
- Take steps *now* to preserve genetic integrity
- Natural processes first priority; others (jumpstart) come after

Other Solutions:

- Implement the Wild Fish Policy as it pertains to hatcheries
- Keep public informed and educated - assure perceptions based on facts
- Budget and budget priorities need careful examination
- Need consensus and cooperation by *all* parties to avoid listing
- Define terms such as "hatchbox" and how tools for recovery will be used by all parties
- Do research on minimum viable populations - fine tune PFMC process
- Look at coast-wide gene conservation policy

Miscellaneous Actions:

- Habitat protection a part of changes in hatchery program
- Integrate habitat restoration with stock characteristics (genes)
- Reconsider use of mixed stock and terminal fisheries

- Match hatchery production to fishery and biological goals
- Control predators
- Implement Wild Fish Policy
- Floodplains and estuaries - can't get full production back

Harvest Management

General Statement of Purpose: Harvest only surplus fish stocks above escapement needed to achieve optimum healthy, sustainable populations of salmonids.

Instream Harvest Strategies:

- Reduce annual salmon/steelhead punchcard limit in systems identified as critical
- Catch and release for all wild salmonids at time periods when critical species are present
- Allow take of unmarked fish in cases of abundant wild stocks or hatchbox programs
- Prioritize terminal fisheries that target on surplus stocks (hatchery and wild)

Ocean Harvest Strategies:

- Maintain a conservative management approach based on scientific information - flexibility to make corrections
- Encourage terminal fisheries to target on abundant hatchery/wild surpluses - investigate possibilities
- Release wild fish taken in ocean fishery - mark all hatchery fish

Scientific Database Strategies:

- Stock abundance and availability by time and area
- Fit harvest to habitat capabilities
- Identify critical stocks *now* - hire people to snorkel pools and make juvenile surveys during summer
- Redirect federal funding towards fish/fisheries projects
- Identify economic trade-offs
- Analysis of marking techniques and associated mortality and cost

Strategy Categories:

Harvest Techniques/User Groups:

- Compensation package
- Concentrate on STEP; maximize public involvement and expand functions
- Quantify hooking mortality impacts
- Quantify and reduce other bycatch and other losses
- Look at harvest techniques
- Rebates or incentives for punchcard returns

Information Dissemination:

- Establish timely emergency fishing regulations
- Education
- Publicize STEP

Harvest Strategies, Rules, Regulations, Legislation:

- Eliminate mixed-stock fisheries
- Conservative management approach
- Clear, timely and accurate information to media and public
- Get reliability into fishing seasons
- Harvest only surplus fish
- Modify ESA
- Evaluate MARINE MAMMAL ACT (MMA)
- Mark all hatchery fish (marking mortality?)
- Improve punchcard system
- Reverse trends on wild stocks
- Create more terminal fisheries - net pens at marinas
- Consider renegotiating of treaties and agreements
- Maintain sport fishery
- Reduce California harvest - OCN
- Reduce annual bag/allocation

Scientific Database:

- Determine specific capabilities/production of system
- Harvest based on science
- Secure information base through funding
- Complete inventory of fish (stream and ocean)
- Numerical spawning goals
- Redirect federal funding to *fish*
- Identify critical stocks
- Quantify hooking mortality impacts in Oregon
- Catch statistics (include cutthroat)
- Use public/charter catch information
- Designate stream/watershed for cutthroat research
- Downstream migrant conservation

Miscellaneous:

- More STEP
- Salmon supplementation - specifically, net pens in marinas
- Watershed recovery
- Improved screening of water diversions

Biological Community Management

Marine Mammals:

The issue of marine mammal predation is not clearly understood. The management of marine mammals should be based on sound biological information:

1. Develop a process to define extent of predation

2. Determine acceptable level of predation
3. Within the constraints of the Marine Mammal Act, seek relief for problem situations
4. Seek legislative change

Wild Stocks:

Goal: Optimize genetic diversity of wild stocks (life history)

Actions:

1. Identify and inventory wild stocks coastwide
2. Accelerate effort to determine genetic differences of wild stocks
3. Develop mechanism to protect wild stocks (identify for prioritizing stocks at greatest risk)
4. Optimize genetic diversity of wild stocks (through transfer of wild stocks)

Competitors:

- Remove from lakes (such as Tenmile Lake) warm-water fish populations that compete with salmonid populations. Develop a process to analyze trade-offs.

- Inventory shad populations and determine whether or not shad are in competition with and/or prey on salmonid populations

Miscellaneous

- Develop forum for communication
- Review existing plans that work (CRMP)
- Develop process to get private and public sectors together
- Can we have an impact on(in) predator control?
- Need to look at long-term plan to deal with marine mammals - process to involve federal agencies
- Marine mammal control low priority
- Monitoring program for marine mammal (intensive)
- Define conflict between protective legislation - MMA/ESA
- Define public and private sectors regarding: harvest, habitat, hatcheries
- Define problems in biological community - real or perceived

ACKNOWLEDGEMENTS

ACKNOWLEDGMENTS

As with any such endeavor, no single person can bring together all the elements required for a successful and fruitful venture of the magnitude of the Coastal Salmonid Restoration Initiative. The following people were instrumental in setting up, conducting, participating in, or following up on the conference.

Governor Barbara Roberts who, with Senator Bill Bradbury and Rollie Schmitten (Regional Director of National Marine Fisheries Service), called for the conference and brought together the participants;

State Senator Bill Bradbury, Bandon, who championed the conference;

Anne Squier, the Governor's Natural Resources Policy Advisor, who kept participants focused on the Governor's goal;

Jay Rasmussen (Director) and Georgia York of the Oregon Coastal Zone Management Association for arranging the logistics for the conference and seeing that the needs of the participants were met;

Randy Fisher (Director of the Oregon Department of Fish and Wildlife [ODFW]), who worked closely with Anne Squier and Jay Rasmussen to organize the conference and mobilize ODFW's personnel to assist with producing the conference;

Employees of ODFW who played critical roles in the success of the conference: Barry McPherson, who had the lead assignment to coordinate ODFW's contribution and work with Jay Rasmussen to frame the conference goal, develop the agenda, and recruit authors, speakers, moderators and facilitators; and Jim Martin, Tom Nickelson, Jay Nicholas, Rod Kaiser, Doug DeHart, Tony Faast, and Jim Gladson;

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Mary Potter, ODFW, who synthesized and summarized the concerns and suggestions of conference participants with the aid of Holly Ketter's (ODFW) transcription of the Working Group presentations.

A BLUEPRINT FOR DEVELOPING A PACIFIC NORTHWEST COASTAL SALMONID RESTORATION PLAN AND INTERIM ACTIONS IN OREGON

Fish Division
Oregon Department of Fish and Wildlife

March 1993

CONTENTS

A BLUEPRINT FOR DEVELOPING A PACIFIC NORTHWEST COASTAL SALMONID RESTORATION PLAN AND INTERIM ACTIONS IN OREGON

Introduction

Numerous populations of salmon, steelhead, and trout in coastal rivers of California, Oregon, and Washington are at depressed levels and could possibly be listed under the federal Endangered Species Act, adding to the salmon already listed in the Columbia and Sacramento rivers. West coast states need federal support to restore and sustain coastal salmonids. A change in national policy guidance to federal agencies is needed so that they will elevate the priority of protection and restoration of these fish, and federal funding is needed for restoration activities. In addition, the individual states need to develop and implement a program of restoration activities specific to the needs of their salmonid populations.

The following document, built on ideas discussed at the Governor's Coastal Salmonid Restoration Initiative, describes a restoration planning and implementation process that incorporates both multi-state and Federal cooperation, individual state initiative, and public involvement (Fig. 1). This document proposes both technical and political approaches necessary to begin the process of restoring coastal salmonid populations to more desirable levels. This process should be incorporated into the upcoming Timber Summit.

One aspect of the proposed planning process is multi-state and Federal coordination of political and governmental actions that will address management of populations that cross state boundaries, avoid duplication of effort, and facilitate the acquisition of federal funding for restoration activities (Appendix A).

A second aspect of the proposed process is the development of individual state restoration plans. The Oregon plan currently consists of a framework plan that identifies the major elements necessary for restoration of depressed populations (Fig. 2). It also describes the process for developing a comprehensive Oregon Coastal Salmonid Restoration Plan (Figs. 3 and 4). Whereas the draft Oregon plan may serve as a model for the other states, each state's plan may be quite different, a reflection of the differences in habitats, status of fish populations, and political processes within each state.

Many activities are currently underway or could be implemented immediately in Oregon that are pertinent to restoration of coastal salmonids. By May 1993, State agencies will develop and implement new interim restoration actions to increase protection and accelerate restoration of coastal salmonids during the 18 month planning process. Similarly, private groups will be asked to identify interim private sector actions.

The Oregon Coastal Salmonid Restoration Plan

The Oregon restoration planning process consists of some activities that are primarily political/governmental, some activities that are technical/scientific in nature, and a public review process that will culminate in the Oregon Coastal Salmonid Restoration Plan (The Plan). The products of these activities will provide the specifics to the restoration framework plan (Fig. 2). By mid-1994, the products of this process will be incorporated into The Plan that will provide a basis for modifying current programs and implementing new programs involving both the public and private sectors.

The planning process consists of several task forces developing products associated with elements of the framework plan (Fig. 2). These task forces will be comprised of scientists, or of scientists and public representatives, depending on the topic. One or two members of some task forces may also serve as Oregon's representative on similar multi-state task forces. Each task force will have a specified timeframe to complete a product. Ideas pertinent to the products of each task force will be solicited from participants of the Governor's Coastal Salmonid Restoration Initiative for possible incorporation into the final plan.

A public advisory group will contribute to the development and review of the products originating from each task force. The advisory group will be appointed by the Governor from among participants in the Governor's Coastal Salmonid Restoration Initiative. This group will meet bimonthly to review progress of the task forces, provide broad public reaction to, and critique drafts of the elements of the restoration plan.

Task forces will have final reviewed products completed by March of 1994. At that time ODFW will integrate these products into a draft of The Plan which will be finalized by June of 1994, following public review and a second Governor's Coastal Salmonid Restoration Initiative workshop. An Implementation Task Force, comprised of policy level representatives of state, federal, and private organizations appointed by the Governor, will allocate resources to the restoration effort and monitor progress towards restoration based on criteria established in The Plan.

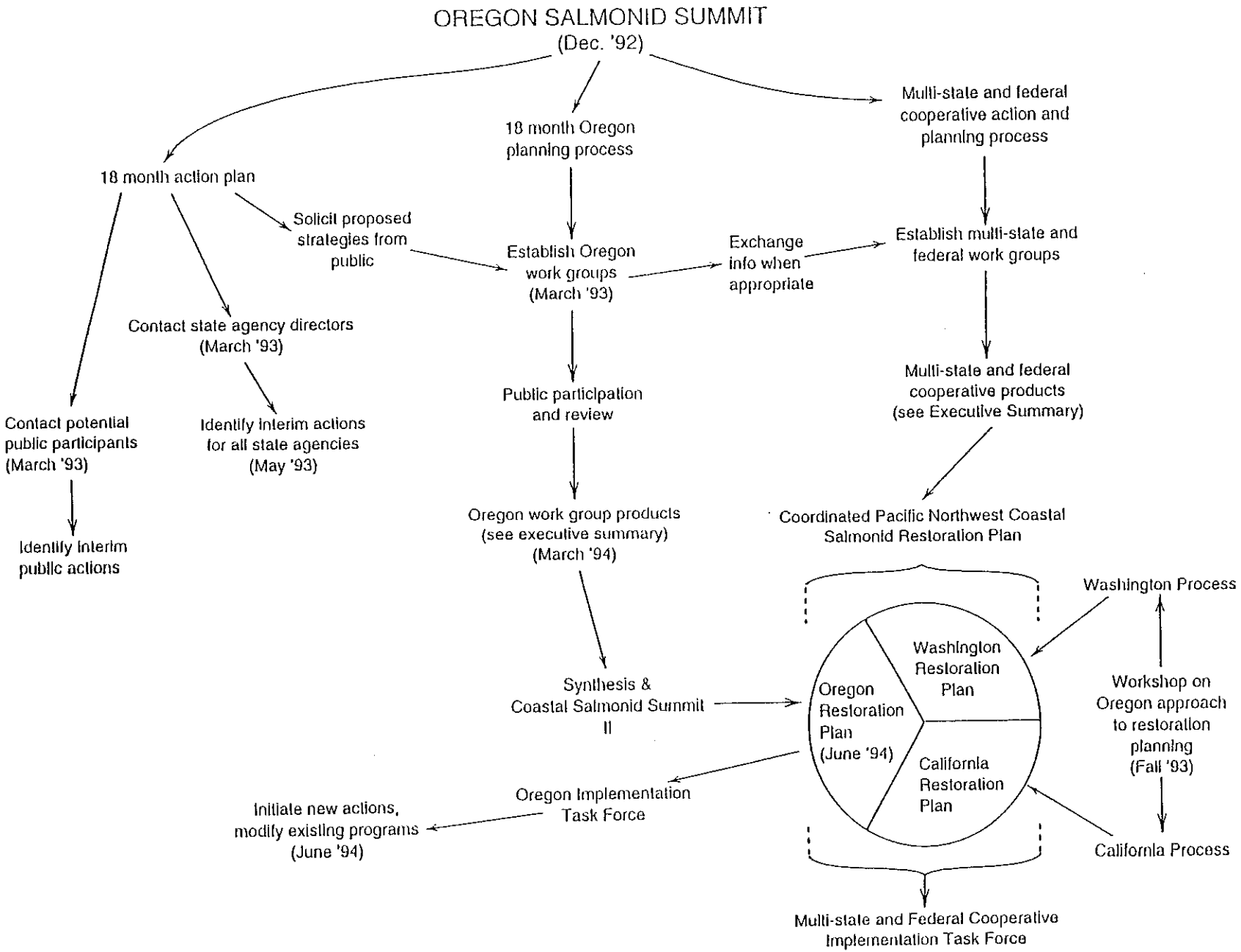

OREGON SALMONID SUMMIT
(Dec. '92)
18 month action plan
18 month Oregon planning process
Multi-state and federal cooperative action and planning process
Solicit proposed strategies from public
Establish Oregon work groups (March '93)
Exchange info when appropriate
Establish multi-state and federal work groups
Contact state agency directors (March '93)
Contact potential public participants (March '93)
Identify interim actions for all state agencies (May '93)
Identify interim public actions
Public participation and review
Multi-state and federal cooperative products (see Executive Summary)
Oregon work group products (see executive summary) (March '94)
Coordinated Pacific Northwest Coastal Salmonid Restoration Plan
Washington Process
Synthesis & Coastal Salmonid Summit II
Oregon Restoration Plan (June '94)
Washington Restoration Plan
California Restoration Plan
Workshop on Oregon approach to restoration planning (Fall '93)
Oregon Implementation Task Force
Initiate new actions, modify existing programs (June '94)
California Process
Multi-state and Federal Cooperative Implementation Task Force

FIGURE 2. OREGON COASTAL SALMONID RESTORATION FRAMEWORK PLAN

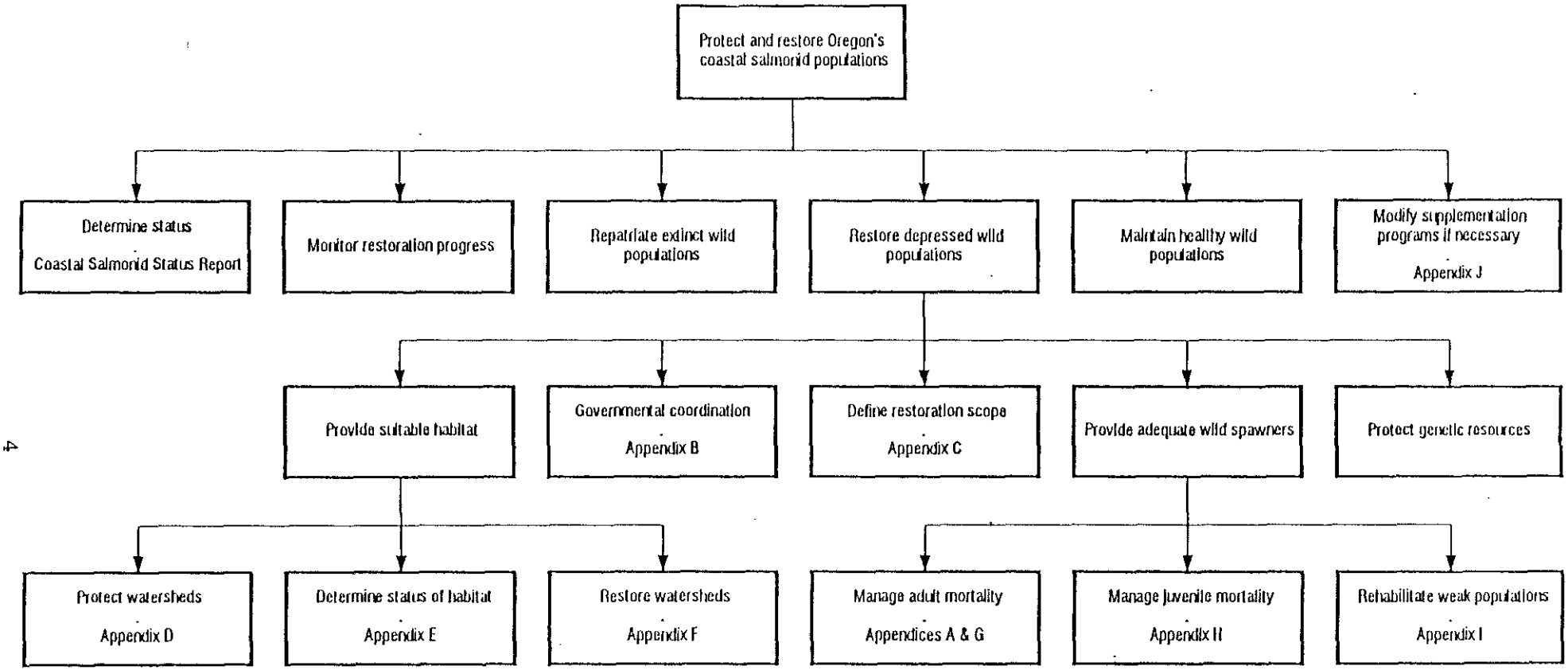


FIGURE 3. DEVELOPMENT OF DETAILS OF THE OREGON COASTAL SALMONID RESTORATION PLAN

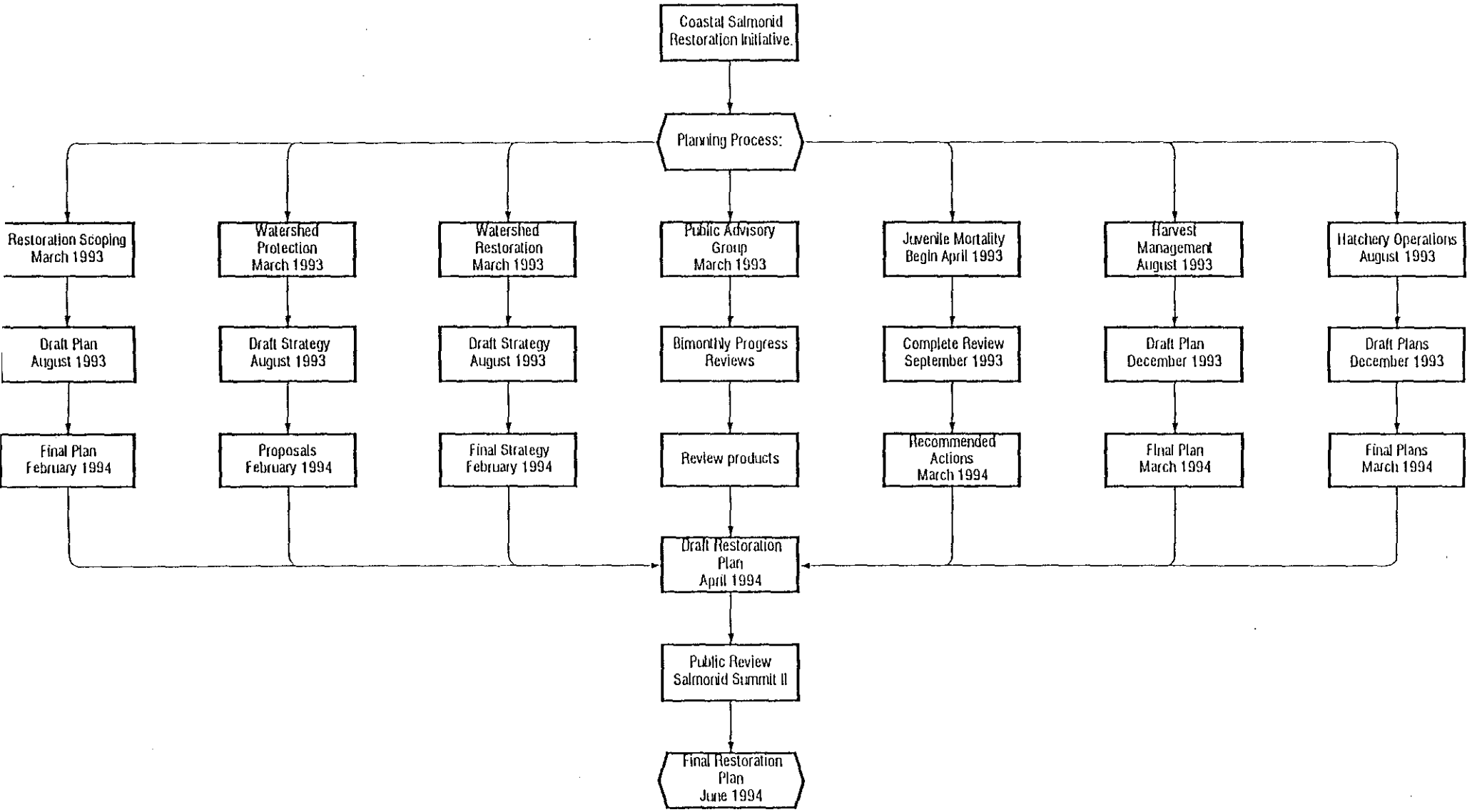
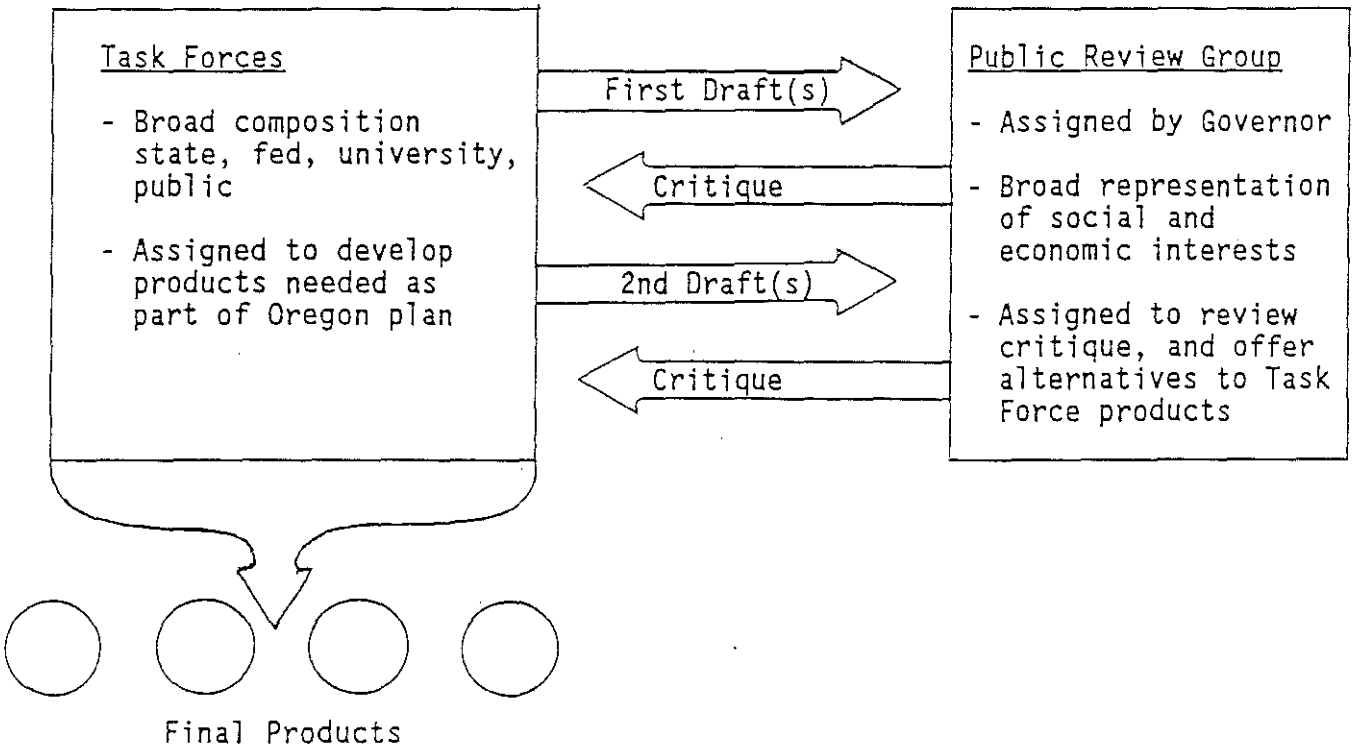
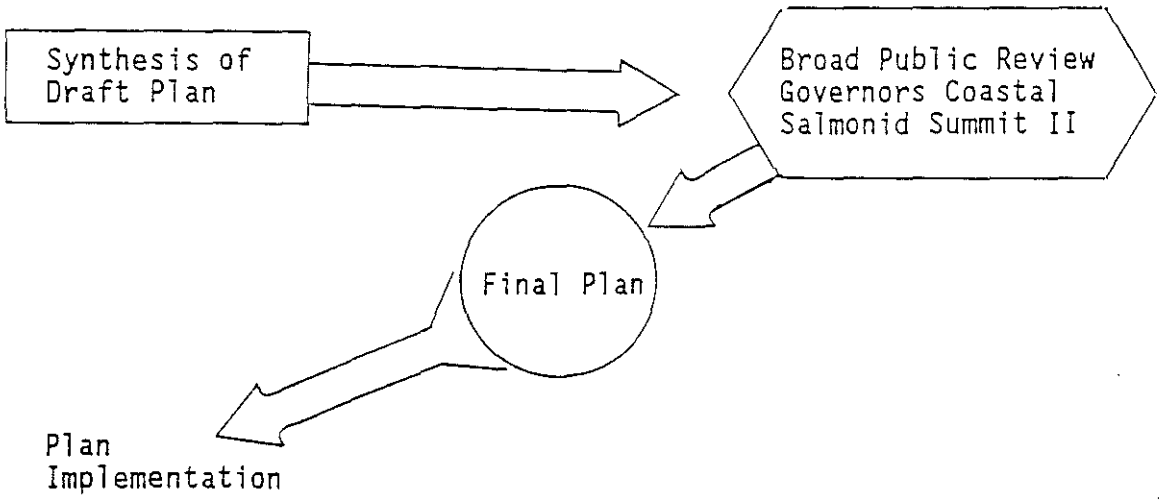


FIGURE 4. OREGON PUBLIC REVIEW PROCESS





EXECUTIVE SUMMARY OF ACTIONS

The following priority levels are used to describe the planning products listed in APPENDICES A-J.

Level 1. Achievement of restoration is improbable without this product.

Level 2. Achievement of restoration will be significantly impaired, but is possible without this product.

Level 3. Achievement of restoration can probably occur without this product.

Priority Level 1 Action

Cooperative Action By Governments

Product	Description
A-4	Federal legislation or administrative rules as needed to implement the habitat protection strategy developed in Product D-1.
B-1	Implementation Task Force (ITF).
B-2	Public advisory group to assist technical task forces
B-3	Oregon legislation or administrative rules as needed to implement the habitat protection strategy developed in Product D-1.

Technical Actions and Task Forces

Product	Description
C-1	Restoration Scoping Plan (RSP) for Oregon coastal salmonids.
D-1	Development of a habitat protection strategy.

Priority Level 2 Action

Cooperative Action By Governments

Product	Description
A-1	Coordination of tri-state salmonid restoration initiative at Governors Office level
A-2	Coordinate harvest management needs of restoration efforts through PFMC Process
A-3	Multi-state agreement to mark hatchery fish as needed to achieve restoration

Technical Actions and Task Forces

Product	Description
E-1	Inventory Oregon coastal aquatic habitats.
F-1	Watershed and aquatic habitat restoration strategy.
G-1	Oregon fishery harvest management plan.
I-1	Guidelines for use of artificial seeding.
J-1	Comprehensive Oregon fish marking program.

Priority Level 3 Action

Cooperative Action By Governments

Product	Description
A-5	Proposed amendments to Marine Mammal Protection Act
A-6	Federal economic incentive/compensation program
B-4	Legislation to create an Oregon economic incentive/compensation program.

Technical Actions and Task Forces

Product	Description
E-2	Enter all available habitat data on comprehensive, database.
F-2	List of potential aquatic habitat and watershed restoration projects.
H-1	Point-source juvenile mortality.
H-2	Angling-related juvenile mortality.
J-2	Hatchery operational plans.

IMMEDIATE ACTIONS NECESSARY BY THE GOVERNOR'S OFFICE

1. Contact counterparts in Washington and California Federal agencies to begin the multi-state planning process, including assembling marine mammal task force and habitat protection task force.

2. Work with ODFW to assemble technical task forces.

3. Appoint the public advisory group.

4. Send a letter to all State natural resource agency directors, Oregon State Police, and the Attorney General stating that coastal salmonid restoration is a high priority, and directing them to develop and implement, through consultation with ODFW, new interim restoration actions to increase protection and accelerate restoration of coastal salmonids during the 18 month planning process.

5. Contact potential public participants in restoration (such as large landowners) and request that they identify new interim restoration actions.

6. Send a letter to participants of the Governor's Coastal Salmonid Restoration Initiative soliciting ideas that might be pertinent to the products of the various task forces. Ideas should be written on a form will be provided in the mailing and sent to the individual task force leader. Names and addresses will be provided.

APPENDIX A

MULTI-STATE AND FEDERAL COASTAL SALMONID RESTORATION INITIATIVE

Product A-1. A coordinated effort by the Governor's offices of Oregon, Washington and California and Federal agencies to instigate restoration actions for coastal salmonids. For example, a workshop could take place in Fall 1993 to describe the Oregon approach to restoration planning.

Timetable: A multi-state and Federal working group should be networked by the Governor's office by June 1993 so they can begin coordination of multi-state actions.

Responsibility: The Governor's office.

Priority: *Level 2.*
This action is very important to the success of RSP for two reasons. First, some restoration actions may require multi-state cooperation, and second, Federal funding of restoration efforts will be contingent on a multi-state approach.

Product A-2. Through the PFMC process, highlight harvest management needs specifically related to restoration of Oregon coastal salmonids.

Timetable: The PFMC process is ongoing. As new guidance is provided by the Oregon Coastal Salmonid Restoration Initiative it will be introduced into the PFMC process.

Responsibility: ODFW.

Priority: *Level 2.*
Present harvest rates for some populations appears to be excessive given current freshwater habitat and ocean conditions. This action addresses this problem and improves coordination of harvest management efforts with other restoration actions.

Product A-3. A coordinated, multi-state agreement to increase marking of hatchery fish to levels an may be required to achieve restoration of wild populations in Oregon, California, and Washington.

Timetable: Communication, coordination, and negotiation are in progress at this time in regional fishery management forums. Currently all hatchery steelhead are being marked in Oregon. The agreement should be completed within one year, and may involve a progressive phase-in of marking.

Responsibility: ODFW will be lead agency.

Priority: *Level 2.*
Depending on species and population, this may be very important to achieving restoration milestones. New funds may be required.

Product A-4. Federal legislation or administrative rules as needed to implement the habitat protection strategy developed in Product D-1.

Timetable: Action to begin the legislative process should start as soon as legislative needs are identified by the the habitat protection task force.

Responsibility: A multi-state habitat protection task force will be appointed to develop the proposed legislation. Members should include representatives from the Oregon habitat protection task force (see D-1). The Governor's office will work with the Northwest Congressional Delegation to arrange for suitable and effective sponsorship in Congress of any needed Federal legislation.

Priority: *Level 1.*
This action is extremely critical to restoration of coastal salmonid populations. Degradation of freshwater and estuarine rearing habitats was identified at the Governor's Coastal Salmonid Restoration Initiative as the single most important factor in the decline of coastal salmonid populations.

Product A-5. A written proposed amendment to the Marine Mammal Protection Act (MMPA) that can be introduced in Congress by the Northwest Congressional Delegation during reauthorization of the act in 1993.

Timetable: A draft proposed amendment to the MMPA should be prepared by July 1993.

Responsibility: Governors' offices appoint representatives from each state to a task force of scientists and industry representatives to draft amendment. The Governor's office will work with the Northwest Congressional Delegation to arrange for suitable and effective sponsorship of the proposed amendment in Congress during 1993.

Priority: *Level 3.*
Reauthorization of the MMPA is expected to occur sometime in 1993. Whereas scientific assessment of the impact of marine mammals on Oregon salmonids is scant, and subject to interpretation, any changes to the MMPA that may be helpful in achieving restoration milestones must occur during 1993.

Product A-6. A Federally funded economic incentive/compensation program to encourage participation in restoration actions.

Timetable: Undetermined.

Responsibility: The Governor's office.

Priority: *Level 3.*
May be important to success of restoration through cooperation rather than regulation. This message came through clearly at the Governor's Coastal Salmonid Restoration Initiative. Requires new funding.

APPENDIX B

GOVERNMENTAL COORDINATION AND LEGISLATION

Product B-1. An "Implementation Task Force" (ITF) will allocate resources to the restoration effort and monitor progress towards restoration based on criteria established in the Oregon Coastal Salmonid Restoration Plan (The Plan).

Timetable: The ITF should be established by the time that the first draft of The Plan is completed.

Responsibility: The Governor's Office will appoint members to the ITF. Members should include policy level representatives of all state, federal, and private organizations that will play an active role in achieving the restoration of Oregon salmonids.

Priority: *Level 1.*
This is an essential action in the restoration process because it is the mechanism to coordinate The Plan into action and is essential to efficient allocation of state, federal, and private resources to the restoration process.

Product B-2. Established public advisory group to function with technical task forces. This group will be comprised of 10-12 representative participants from the Governor's Coastal Salmonid Restoration Initiative. This group will meet bimonthly to review progress, provide broad public reaction to, and critique drafts of the various elements of the restoration plan.

Timetable: The public advisory group should be established by the time that the technical task forces begin work (March 1993).

Responsibility: The Governor's Office will appoint members to the public advisory group.

Priority: *Level 1.*
This action is essential to achieve public ownership of the restoration process.

Product B-3. Legislation or administrative rules as needed to implement the habitat protection strategy developed in Product D-1.

Timetable: Introduction to the 1995 Legislature.

Responsibility: The Governor's office.

Priority: *Level 1.*
This action is extremely critical to restoration of coastal salmonid populations. Degradation of freshwater and estuarine rearing habitats was identified at the Governor's Coastal Salmonid Restoration Initiative

as the single most important factor in the decline of coastal salmonid populations.

Product B-4. A State funded economic incentive/compensation program to encourage participation in restoration actions.

Timetable: Undetermined.

Responsibility: The Governor's office.

Priority: *Level 3.*
May be important to success of restoration through cooperation rather than regulation. This message came through clearly at the Governor's Coastal Salmonid Restoration Initiative. Requires new funding.

APPENDIX C

DEFINE RESTORATION SCOPE AND MILESTONES

Product C-1. A written Restoration Scoping Plan (RSP) will include at least the following: (1) identify and map species, populations, and associated watersheds that merit restoration activities; (2) rank relative need for action; (3) predict probable success of actions; (4) define measurable mileposts; (5) describe monitoring activities, and; (6) discuss adaptive management options. The RSP becomes the part of the Oregon Coastal Salmonid Restoration Plan that identifies "targets" and priorities for applying the restoration "tools" developed by the other 5 task forces (Watershed Protection, Watershed Restoration, Juvenile Mortality, Harvest Management, and Hatchery Operations). A draft RSP will be needed before the latter two task forces initiate their work, as shown in Figure 3.

Timetable: A first draft strategic plan will be prepared by August 1993 and a "complete draft" by February 1994.

Responsibility: ODFW. The RSP will be developed by a small planning task force. The participation of selected scientists and managers will be needed throughout the process. Drafts of the RSP will be sent out to other agencies and the public for review and comment.

Priority: *Level 1.*
This is an essential action in the restoration process because it will define "restoration" and provide a coherent process for administering the restoration program. Many ideas that came up at the Governor's Coastal Salmonid Restoration Initiative addressed the issue of coordination of activities. This product is a way of getting at these ideas and is a continuation of an activity already begun by ODFW in 1991.

APPENDIX D

PROTECT HABITAT IN COASTAL ECOSYSTEMS

Product D-1. A habitat protection strategy to provide a "tiered" approach to habitat protection that provides to ecosystems critical to the perpetuation of coastal salmonid populations, a higher level of protection than is currently being provided. A system of ecosystem sanctuaries should be established on State or Federal land within each major watershed to protect critical habitat. A system such as that suggested by the American Fisheries Society would be a good model. Also included should be legislation to protect stream ecosystems from harmful agricultural practices, and legislation to protect all riparian ecosystems, including those in industrial and urban areas.

Timetable: Action should start immediately to begin the legislative process with a goal of introduction into the 1995 Legislature.

Responsibility: The Governor's office will appoint a habitat protection task force to develop the proposed legislation. Members should include scientists and representatives from appropriate agencies, environmental groups and landowners. The Governor's office will work with the Northwest Congressional Delegation to arrange for suitable and effective sponsorship in Congress of any needed Federal legislation and with the Legislature to create needed State legislation.

Priority: *Level 1.*
This action is extremely critical to restoration of coastal salmonid populations. Degradation of freshwater and estuarine rearing habitats was identified at the Governor's Coastal Salmonid Restoration Initiative as the single most important factor in the decline of coastal salmonid populations.

APPENDIX E

DETERMINE AMOUNT AND STATUS OF AQUATIC HABITAT IN COASTAL OREGON ECOSYSTEM

Product E-1. Conduct inventory of aquatic habitats in coastal river basins. Inventory data must be sufficient to (1) grossly identify limiting factors by species, (2) predict approximate productive capacities by species, and (3) detect changes in limiting factors and carrying capacities in the future.

Timetable: Ongoing.

Responsibility: Inventories of aquatic habitat are currently being conducted in Oregon coastal basins by ODFW, USFS, and BLM.

Priority: *Level 2.*
Aquatic habitat inventory data are very important to the effectiveness of the RSP and to periodic revisions to the RSP. The ODFW Aquatic Habitat inventory project is currently funded 50% by the Restoration and Enhancement Board. New funding will be required if the present source were no longer available.

Product E-2. A common database for existing aquatic habitat inventory data that is complete, current, and accessible to all resource management agencies.

Timetable: Currently undetermined

Responsibility: Currently undetermined

Priority: *Level 3.*
If existing aquatic habitat inventory data that are recorded in varying formats in the files of many resource management agencies were readily understandable and accessible, the effectiveness and reliability of The Plan would be improved. Requires new funding.

APPENDIX F

RESTORE HABITAT IN COASTAL ECOSYSTEMS

Product F-1. A written watershed and habitat restoration strategy. This strategy will describe "state of the art" methods to restore watersheds and stream habitat. It will outline under what conditions each method is appropriate and what parts of basins should be targeted for restoration.

Timetable: A first draft of the strategy will be prepared by August 1993 and a "complete draft" by February 1994.

Responsibility: ODFW research scientists, with the aid of other selected scientists from Oregon, Washington, and California.

Priority: *Level 2.*
This action is very important to restoration of coastal salmonid populations. Degradation of freshwater and estuarine rearing habitats was identified at the Governor's Coastal Salmonid Restoration Initiative as the single most important factor in the decline of coastal salmonid populations.

Product F-2. A compilation of proposed watershed and habitat restoration projects by watershed that can be evaluated and prioritized for implementation by the IFT based on the habitat restoration strategy (F-1) and the RSP.

Timetable: Lists should be compiled by February 1994 in time to be acted upon by the IFT. New ideas will be continually added to the lists.

Responsibility: ODFW coastal District Fish Biologists work with user groups, land owners, and interested public in their area.

Priority: *Level 3.*
This action would improve the process of on-the-ground restoration of coastal salmonid populations.

APPENDIX G

MANAGE DIRECTED AND NON-DIRECTED MORTALITY OF ADULT SALMONIDS

Product G-1. A written plan describing harvest actions that may be required to achieve the milestones defined in the RSP. The plan will include at least the following: (1) identification of populations that appear to be experiencing excessive harvest; (2) description of alternate approaches to reduce harvest rates (e.g. marking all hatchery fish); (3) identification of potentially significant sources of non-directed harvest mortality on adults (such as catch in high seas drift nets or "shaker " mortality of coho salmon in a chinook salmon-only fishery), and; (4) description of needed monitoring activities and adaptive management options.

Timetable: A final plan will be completed by February 1994. Alternate approaches to achieving harvest rates will be evaluated in appropriate management and user-group forums prior to implementation in 1994 or later. Monitoring activities will continue as at present or will be phased-in when appropriate.

Responsibility: ODFW.

Priority: *Level 2.*
This is a very important action. Present harvest rates for some populations appears to be excessive given current freshwater habitat and ocean conditions. This action addressed this problem and improves coordination of harvest management efforts with other actions identified in The Plan.

Predation by marine mammals is covered in Appendix A.

APPENDIX H

MANAGE DIRECTED AND NON-DIRECTED MORTALITY OF JUVENILE SALMONIDS

Product H-1. A review of "point sources" of mortality on juvenile salmonids such as unscreened diversions, dams, inadequate streamflows caused by water diversions, aggregations of predators, and degraded water quality caused by waste discharge to determine the scope of these problems for coastal salmonid populations. Some sources of mortality have already been determined by ODFW to be a critical problem. For example, ODFW has identified over 1,000 unscreened water diversions in coastal watersheds. The review will result in a list of populations targeted by the RSP that are thought to be currently experiencing "point sources" of mortality on juveniles at a level inconsistent with the RSP and a strategy to address these mortality sources.

Timetable: Draft review completed by September 1993, final recommendations in March 1994.

Responsibility: ODFW, Habitat Conservation Division will take lead.

Priority: *Level 2.*
A 10-year plan to screen diversions is being developed by ODFW.

Product H-2. A review of angling-related mortality on juvenile salmonids consistent with the RSP. The review will result in: (1) a list of populations targeted by the RSP that are thought to be currently experiencing angling-related mortality on juveniles at a level inconsistent with the RSP; (2) a description of proposed management approaches to reduce mortality to acceptable levels, and; (3) a description of monitoring needed to verify attainment of satisfactory mortality rates.

Timetable: Undetermined.

Responsibility: ODFW.

Priority: *Level 3.*
This product will probably have a relatively minor effect on most populations, and is not expected to make a large individual contribution to the success of the The Plan.

APPENDIX I

USE ARTIFICIAL SEEDING, WHERE APPROPRIATE, TO REHABILITATE WEAK POPULATIONS

Product I-1. Written guidelines for the use of artificial seeding to rehabilitate salmonid populations. The guidelines will serve at least two purposes: (1) to evaluate the potential appropriateness of artificial seeding to rehabilitate an individual population, and (2) to describe technical protocols tailored to the needs of each population, considering such factors as status, capacity of the habitat and probable physical factors limiting the population, life history characteristics of the population being rehabilitated, status and life history characteristics of other non-target fish populations in the basin, habitat ownership in the basin, and plans to rehabilitate habitat in the basin.

Timetable: Completed no later than February 1994.

Responsibility: ODFW.

Priority: *Level 2.*
This product is an important element needed to accomplish restoration. Research conducted to date has shown that past efforts to use artificial seeding was likely to be either of no help or detrimental to wild populations. Future use of hatchery technology to assist weak populations is more likely to be successful if the hatchery programs are compatible with the life history and habitat conditions of the affected population.

APPENDIX J

MODIFY HATCHERY SUPPLEMENTATION PROGRAMS AS NECESSARY TO FACILITATE RESTORATION OF WILD POPULATIONS

Product J-1. Comprehensive marking program for all hatchery fish.

Timetable: Currently all hatchery steelhead are being marked. ODFW needs to develop procedures, facilities, and funding as required to mark the percentage (possibly 100%) of all species of hatchery fish necessary to facilitate restoration of wild populations.

Responsibility: ODFW.

Priority: *Level 2.*
Marking of all hatchery fish in Oregon may be required in the near future. Significant planning will be necessary to determine the necessary percentage of fish to mark, the best type of mark to use, and the modification of facilities necessary to accomplish this marking. New funds may be required.

Product J-2. Written operational plans for individual coastal hatchery programs that need modification to facilitate restoration of wild populations. These operational plans will contain explicit direction to tailor the hatchery program to The Plan.

Timetable: The operational plans will be prepared by March 1994.

Responsibility: ODFW.

Priority: *Level 3.*
It is important to ensure that operation of coastal hatchery programs is compatible with, and supports restoration actions prioritized and identified in The Plan. Written operational plans woll be helpful.