

Oregon Coast Coho Conservation Plan

12-Year Plan Assessment

Appendix IV.

Oregon's Regulatory and Non-Regulatory Framework for Aquatic Habitat Restoration and Protection



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Oregon's Regulatory & Non-Regulatory Framework for Coho Habitat Restoration & Protection

A Regulatory & Non-Regulatory Approach

A number of regulatory mechanisms protect Oregon Coast coho salmon and their habitat. However, Oregon believes that regulatory mechanisms are just one tool (or one type of strategy and action) to address limiting factors. Regulatory approaches to habitat restoration and protection have limitations and are not the only tool. Oregon believes that the combination of non-regulatory/regulatory mechanisms and a focus on building partnerships is much more effective in the long term than simply relying on regulation. The following is a summary of state regulatory and non-regulatory programs, linked to salmonid habitat limiting factors.

Linking Regulatory and Non-Regulatory Programs to Habitat Limiting Factors

ODFW's Coastal Multi-Species Conservation and Management Plan (CMP; ODFW 2014) has a planning area encompassing the geography of the OC Coho ESU. In that plan, ODFW provided a framework for linking habitat restoration and protection programs to salmonid habitat limiting factors. This framework provides a useful means for describing the habitat restoration and protection programs relevant to OC coho salmon. Below, ODFW summarizes the framework provided in the CMP and includes updated tables of state regulatory and non-regulatory programs relevant to habitat restoration and protection within the OC Coho ESU.

In the CMP, ODFW outlined presumptive ecological pathways by which habitat threats are manifested into limiting factors for anadromous salmon and trout, including coho salmon. The pathways are initiated through the principal governing processes that influence instream, riparian, and upslope functions (Theobald et al. 2010), which in turn interact through subordinate processes to form salmonid habitat. Four threat pathways were described:

- 1) Flow Regime - Changes to watershed hydrology processes affecting water runoff, infiltration, and groundwater flow to the stream channel (Table A-IV:1a).
- 2) Sediment Production - Changes in upland processes affecting sediment sourcing into the stream channel (Table A-IV:1b).
- 3) Riparian Processes - Changes in riparian processes, lateral connectivity, and in-stream morphology (Table A-IV:1c).
- 4) Estuary Processes - Changes in intertidal/estuarine physical and chemical processes (Table A-IV:1d).

Each threat pathway illustrates ecosystem processes that are likely to be influenced by anthropogenic activities, and pathways were coded according to the principal governing process (Tables A-IV:1a-d). An updated list of major programs sponsored by the State of Oregon that address aquatic habitat protection and restoration are cross-referenced to the causal pathway codes and land use to show program relevance to habitat limiting factors (Table A:IV-2, Regulatory Programs; Table A:IV-3, Non-Regulatory Programs). For example, as shown in Table A-IV: 2, implementation of the Oregon Department of Agriculture's Agricultural Water Quality Management Act is linked to salmonid limiting factors through threat pathways 2 (Sediment Production), 3 (Riparian Processes) and 4 (Estuary Processes) by addressing various causal pathways: 2.1 – Rural Road Network, 2.2 – Agricultural and Forestry Practices, 3.1 – Altered Riparian Stand Composition, 3.2 – Flow Control Structures (revetments, levees, etc.),

3.4 – Simplified Hydraulic Exchange (revetments) and Impervious Surfaces, and 4.1 – External Freshwater Controls. The mechanisms by which each of these causal pathways influences habitat limiting factors for salmonid habitat are described in Tables A-IV:1a-d.

State Regulatory Programs

Table A-IV:2 summarizes the primary regulatory mechanisms by which the State of Oregon regulates aquatic habitat protection and restoration. As described above, each regulatory pathway is cross-referenced to the causal pathway codes in A-IV:1a-d to show relevance to habitat restoration and protection in the OC Coho ESU. Each regulatory mechanism is also cross-referenced to the land use types to which the program pertains. The table does not include county level programs or federal programs, nor does it include partnerships. In addition to the state regulatory programs outlined in Table A-IV:2, several Federal agencies (e.g., FERC, EPA, FEMA, BLM, USFS, USACE) and Counties have regulatory oversight over various aspects of land and water use or management within the OC Coho ESU.

State Non-Regulatory Programs

Oregon has a long and proven track-record of using non-regulatory tools as means to address limitations inherent in the regulatory approach to conserve salmonids and their habitat. In 1997, Oregon's Governor and its Legislature adopted the *Oregon Plan for Salmon and Watersheds (Oregon Plan)* to begin state-led recovery efforts “to restore Oregon's native fish populations and the aquatic systems that support them to productive and sustainable levels that will provide substantial environmental, cultural, and economic benefits”. The *Oregon Plan* has a strong focus on salmon because they are important indicators of watershed health and have significant cultural, economic, and recreational importance to Oregonians. The *Oregon Plan* organizes actions around the factors that contribute to the decline in fish populations and watershed health. Most of these focus on actions to improve water quality and quantity and to restore habitat. The major non-regulatory programs are summarized in Table A-IV:3. Watershed Councils and Soil and Water Conservation Districts lead efforts in many basins. The *Oregon Plan* relies on Oregon's spirit of volunteerism and stewardship, along with public education and awareness, strong scientific oversight, coordinated tribal and government efforts, and ongoing monitoring and adaptive management to achieve program success.

Table A-IV: 1(a-d). Threat pathways ordered across a hierarchical structure of dominant ecosystem processes (sub-tables a through d), watershed functions or components affected by altered processes, and habitat attributes that can limit salmonid viability (habitat limiting factors: HLF's). The relative importance of a pathway (● high, moderate, ○ low) depends in part on location in the watershed (U=Upper, M=Mid, L=Lower). Tables are from ODFW (2014).

Table A-IV: 1a – Processes affecting Flow Regime (ODFW 2014)

1 – Changes to Watershed Hydrology (Flow Regime) processes affecting water runoff, infiltration, and groundwater flow to the stream channel					Relative Importance in Watershed		
Processes	Causal Level Pathway	Altered Watershed Function or Loss of Watershed Component		Salmonid HLF's	U	M	L
		Ecological Threat Level Pathway	Ecological Pathway Consequences (= factors leading to fish HLF's)				
Altered Flow Regime (flood frequency / duration/ variability / intensity), affecting hydrodynamic balance, surface water storage processes, and energy management process	1.1. Land Management Structures: Water Storage/Control Structures and/or Rural Road Networks (examples: culverts and other structures, unscreened water diversions)	1.1.1. Physical downstream flow fragmentation	1.1.1.1. Direct: decreased - habitat connectivity Indirect: decreased access to - total available habitat (habitat quantity) - available habitat diversity	1.1.1.1. Habitat Access - adults: impaired access/dispersal/delay to good holding or spawning habitat. - juveniles: impaired access to diverse rearing habitat (small scale movements) and/or blockage or delay in migration reaches (directional downstream movements)	○	●	●
	1.2. Water Extraction (examples: irrigation and municipal uses)		1.2.1.1. Direct: - decreased channel capacity and aquatic habitat quantity - insufficient instream flows at critical periods Indirect: decreased - instream flows and fish carrying capacity - flow volume and hyporheic buffering → increased stream temperature		○	●	●
	1.3. Flood Control Structures (mostly) that significantly alter hydrograph	1.2.1. Reduced surface and groundwater flow and exchange, 1.3.1. Reduced peak flows within channel, onto floodplain, and through sediments	1.3.1.1. Direct: decreased - frequency, duration, and magnitude of overbank flows and channel forming dynamics - floodplain connectivity → decreased source materials for habitat formation - LWD transport and storage - bed load/sediment transport capacity	1.2.1.1. & 1.3.1.1. Habitat Quantity – unusable habitat (insufficient flows) Water Quality -Temperature (above seasonal thresholds) Physical Habitat Quality - (bed form dynamics simplified) - Instream Sediment Quantity (coarse sediment degrading) - Instream Sediment Quality (fine sediment aggrading)	●	○	○
	1.4. Simplified Hydraulic Exchange (revetments, levees) and Impervious Surfaces	1.4.1. Decreased infiltration → increased surface runoff / flashiness, and decreased surface water storage	Indirect: - riparian forest and change in stand composition - extent of riparian zone development - shade function, → increased water temperature 1.4.1.1. Direct: increased - frequency of substrate scouring - flow dynamics especially in winter, → greater scour and bank erosion, and/or otherwise degrade substrate quality. - decreased hyporheic exchange → increased stream temperature Indirect: -disruption of redds and displacement of alevin/fry	1.4.1.1. Physical Habitat Quality – (bed form dynamics simplified) and Instream Sediment Quantity (scouring) Water Quality -Temperature (above seasonal thresholds)	○	●	●

Table A-IV: 1b – Upland Processes affecting Sediment Sourcing (ODFW 2014)

2 - Changes in Upland Processes affecting sediment sourcing into the stream channel							
Processes	Causal Level Pathway	Altered Watershed Function or Loss of Watershed Component		Salmonid HLP's	Relative Importance in Watershed		
		Ecological Threat Level Pathway	Ecological Pathway Consequences (= factors leading to fish HLP's)		U	M	L
Altered Sediment Sourcing from landslides debris flows, etc. affecting sediment continuity (erosion, transport, deposition processes) and sediment structural processes	2.1. Rural Road Network (examples: episodic failure, chronic input from inadequate buffer, etc.)	2.1.1. Increased fine sediment supply	2.1.1.1. Direct: decreased - hyporheic function Indirect: decreased - aeration of redds - subsurface cooling function - fish egg deposition / incubation function - trophic function	2.1.1.1. Physical Habitat Quality/Quantity - Instream Sediment Quality (fine sediment aggrading)	●	○	○
	2.2. Agricultural and Forestry Activities (examples: inadequate buffers, poor adherence to other BMPs, revetments, levees, dredge/fill)	2.2.1. & 2.3.1 Decreased coarse sediment supply and increased fine sediment supply	2.2.1.1. & 2.3.1.1. Direct: decreased - hyporheic function/cooling capacity - hyporheic maintenance - substrate maintenance	2.2.1.1. & 2.3.1.1. Physical Habitat Quality/Quantity - Instream Sediment Quantity (coarse sediment degrading) and Quality (fine sediment aggrading)	●	●	●
	2.3. Urban/Rural Residential Activities and Structures (examples: impervious surfaces, inadequate buffers, dredge/fill, ditching, poor adherence to other BMPs, etc.)		Indirect: decreased - aeration of redds - subsurface cooling function - fish egg deposition / incubation function - trophic function		○	●	●

Table A-IV: 1c – Riparian Process, Lateral Connectivity, and In-Stream Morphology (ODFW 2014)

3 - Change in Riparian Process, Lateral Connectivity, and in-stream Morphology				Relative Importance in Watershed			
Processes	Causal Level Pathway	Altered Watershed Function or Loss of Watershed Component		Salmonid HLF's	U	M	L
		Ecological Threat Level Pathway	Ecological Pathway Consequences (= factors leading to fish HLF's)				
Altered Association Between Riparian Zone and Stream Channel: affecting geomorphic dynamics, in-stream habitat formation, and physiochemical processing	3.1. Altered Riparian Stand Composition	3.1.1. Decreased LWD supply to stream	3.1.1.1. Direct: decreased - physical habitat creation and maintenance - in channel capacity and aquatic habitat - extent of functional riparian zone - channel/bed form diversity and channel-forming processes Indirect: -Decreased instream fish carrying capacity	3.1.1.1. Physical Habitat Quality- summer (loss of habitat complexity and maintenance)	●	●	○
		3.1.2. Increased solar incidence to stream	3.1.2.1. Direct: decreased - shade function, → increased stream temperature	3.1.2.1. Water Quality-Temperature (above seasonal thresholds)	●	●	○
	3.2 Flow Control Structures (revetments, levees, etc.)	3.2.1. Decreased channel/flow complexity and surface water storage	3.2.1.1. Direct: decreased - material flow exchange between habitat types - fish access to seasonally inundated habitat Indirect: decreased - trophic function	3.2.1.1. Physical Habitat Quality- winter (loss of lateral flow and biotic exchange between habitat types)	○	●	●
	3.3 Altered Channel Morphology / Structure, and Legacy Effects	3.3.1. Artificial dredge/fill features	3.3.1.1. Direct: - decreased coarse sediment supply and increased fine sediment supply Indirect: decreased - channel form and channel-forming processes - channel capacity and aquatic habitat	3.3.1.1. & 3.3.2.1. Physical Habitat Quality/Quantity - Instream habitat simplification, bedrock reaches, hydrologic disconnection	○	●	●
		3.3.2. Decreased substrate structure from previous splash damming	Multiple ecological consequences		○	●	●
		3.3.3. Artificial channels disjoined from natural physical/biological processes			○	●	●
	3.4. Simplified Hydraulic Exchange (revetments) and Impervious Surfaces	3.4.1. Reduced riparian buffering of toxins and fine sediments	3.4.1.1. Direct: more punctuated - temperature levels in aquatic system - toxin levels into aquatic system - fine sediments delivery into aquatic system	3.4.1.1. & 3.5.1.1 Water Quality – Temperature / Toxins / Pollutants / Fine Sediments	○	●	●
	3.5. Water Treatment/ Storm Water Practices/ Control Structures	3.5.1. Increased sourcing of temperature/ toxins / nutrients	3.5.1.1. Direct: - more persistent and punctuated temperature /toxin / nutrient levels in aquatic system		○	○	●

Table A-IV: 1d – Change in Intertidal/Estuarine Physical and Chemical Processes (ODFW 2014).

4 - Change in intertidal / estuarine physical and chemical processes							
Processes	Causal Level Pathway	Altered Estuarine Function or Loss of Estuarine Component		Salmonid HLF's	Relative Importance in Estuary		
		Ecological Threat Level Pathway	Ecological Pathway Consequences (= factors leading to fish HLF's)		U	M	L
Altered Material Processing Dynamics	4.1 External FW Controls: Multiple causal pathways due to altered FW water quality pathways	4.1.1. Increased sourcing of temperature/ toxins / nutrients from FW	4.1.1.1. Direct: - more punctuated and persistent toxin levels in estuarine system	4.1.1.1. Estuarine Water Quality - Toxins / Pollutants	●	●	○
	4.2 External FW Controls: Multiple causal pathways due to altered FW flow pathways	4.2.1. Dampened flow regime dynamics from FW	4.2.1.1. Direct: - simplified chemical mixing function/processing, altering nutrient cycling, and food web composition/dynamics - decreased habitat forming function	4.2.1.1. Physical Habitat Quality/Quantity (loss of energy flow and biotic exchange supporting estuarine food web)	○	●	○
	4.3. Agricultural / Residential / Port Activities within estuary	4.3.1. Habitat simplification	4.3.1.1. Direct: - decreased quantity and quality of estuarine rearing habitat	4.3.1.1. Physical Habitat Quality/Quantity - loss of juvenile rearing habitat	●	●	●

Table A-IV: 2. Description of regulatory mechanisms implemented by the State of Oregon that support aquatic habitat conservation and restoration in freshwaters and estuaries, and their applicability to the causal pathway categories and the codes in Tables A-III: 1a-d). Land use categories applicable to a program and particular causal pathway category are: ALL= All land types; FF= Federal Forest; SF = State Forest; PF = Private Forest; AG = Agricultural/Rural; UR = Urban/Rural Residential; O = Other.

Program and Guidance	Description, Status, Jurisdiction	Causal Pathways leading to Habitat Limiting Factors														
		Flow Regime				Sediment Production			Riparian Processes					Estuary Processes		
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3
<p>Oregon Department of Agriculture (ODA): Agricultural Water Quality Management Act ORS 561.191</p> <p>Ag Water Quality Program OAR Chapter 603, Divisions 90 and 95</p>	<p>The Agricultural Water Quality Management (AgWQM) Act directs ODA to develop plans to prevent and control water pollution from agricultural activities and soil erosion as well as to achieve water quality standards.</p> <p>To accomplish these goals, the AgWQM Program works with Local Advisory Committees, partners, and landowners to develop and implement AgWQM Area Plans and Rules. Through Area Plans and Rules, ODA assists landowners make on-the-ground changes through a combination of outreach programs, suggested land treatments, voluntary management activities, funding, compliance with Area Rules, and monitoring.</p> <p>State and federal programs that drive the establishment of Area Plans and Area Rules include:</p> <ul style="list-style-type: none"> •State water quality standards. •Load allocations for agricultural nonpoint source pollution assigned under Total Maximum Daily Loads issued pursuant to Section 303(d) of the federal Clean Water Act. •Approved management measures for Coastal Zone Act Reauthorization Amendments. •Agricultural activities detailed in a Groundwater Management Area Action Plan 															

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Program and Guidance	Description, Status, Jurisdiction	Causal Pathways leading to Habitat Limiting Factors																		
		Flow Regime				Sediment Production			Riparian Processes					Estuary Processes						
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3				
<p>ODA: Confined Animal Feeding Operations (CAFOs) ORS 468B0.50 and 468B.0125</p> <p>OAR Chapter 603 Division 74</p>	<p>The Oregon Department of Agriculture issues a CAFO permit, under the federal NPDES permitting program or new equivalent state permit program, to livestock owners with an approved plan to prevent manure from polluting ground and surface water.</p> <p>All agricultural landowners must comply with the Waste Rule (ORS 468B.025) by not polluting ground or surface water, discharging wastes into waters of the state, or placing any wastes in a location where they are likely to enter waters of the state (ORS 468B.025).</p> <p>ODA staff works with landowners to develop manure management plans that may include installation of off-stream watering troughs, construction of hardened stream crossings, construction of composting systems, channeling water flow, improved manure disposal and cover, and completion of compliance reports.</p> <p>All permitted and non-permitted Confined Animal Feeding Operations.</p>																AG: Buffer Condition & Control Structures			
<p>ODA: Pesticides Program</p> <p>Oregon State Pesticide Control Act ORS Chapter 634</p> <p>Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)</p> <p>Pesticide Analytic Response Center (ORS 634.550)</p>	<p>The Pesticide Program regulates the sale and use of pesticides in Oregon with the goal of protecting people and the environment from any adverse effects of pesticide use while maintaining the availability of pesticides for beneficial uses. ODA trains, tests, and licenses pesticide applicators to maintain safe and appropriate applications.</p> <p>The Pesticide Analytic Response Center (PARC) administered by ODA is mandated to perform the following activities related to pesticides incidents that have suspected health or environmental effects: Collect incident information, mobilize expertise for investigations, identify trends and patterns of problems, make policy or other recommendations for action, report results of investigations, and prepare activity reports for each legislative session.</p> <p>All pesticide use throughout the state (commercial and private)</p>																	ALL: Control Structures		

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Program and Guidance	Description, Status, Jurisdiction	Causal Pathways leading to Habitat Limiting Factors															
		Flow Regime				Sediment Production			Riparian Processes				Estuary Processes				
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	
<p>Oregon Department of Environmental Quality (ODEQ): Water Quality Standards, 303(d) listings, and TMDL's</p> <p>Federal Clean Water Act; ORS 468B.035 & 048; OAR 340-041-0001 to 340-041-0350; OAR 340-0410046 OAR 340-042</p>	<p>DEQ develops numeric and narrative water quality standards to protect the most sensitive beneficial uses of the waters of the state – typically for protection of cold-water fish and other aquatic life, and human health. Section 303(c) of the Clean Water Act (CWA) requires states to review their water quality standards every three years to ensure that they are based on the best available science. The CWA also requires states to identify (list) waters that do not meet water quality standards on a biennial basis (i.e., 303(d) list or impaired waters list). This listing is often used as a basis for developing water-quality based plans to bring the waters back into compliance with the standards.</p> <p>Total Maximum Daily Loads (TMDLs) are required for waters on the 303(d) list and describe the amount of a pollutant a water body can receive and not violate water quality standards. Loads are allocated among point and nonpoint sources while maintaining a reserve for future growth and a margin of safety. Based on this work, permits for point sources may be modified with the source required to come into compliance with conditions in the permit before the end of the permit cycle (typically 5-years). Nonpoint sources are required to develop and implement Plans designed to meet allocations. DEQ requires Designated Management Agencies (DMA's) to develop Non-Point Source Implementation Plans for sub-basins that have TMDLs. Additionally, DEQ works in cooperation with other state, federal and local agencies to enhance their programs to address elements of non- point source pollution and administers grants and loans to implement on-the-ground projects.</p> <p>All waters of the State</p>																
<p>ODEQ: 401 Dredge & Fill Certifications and Hydroelectric Recertification</p> <p>Federal Clean Water Act; ORS 468B.035 & .047; OAR 340-048</p>	<p>Section 401 of the federal Clean Water Act requires that an applicant for a federal permit, to conduct an activity that may result in a discharge to waters of the State, must provide the permitting agency with a State water quality certification. A water quality certification is the mechanism by which the State evaluates whether an activity will meet water quality standards. Certifications may be denied, approved, or approved with conditions, which if met, will ensure that water quality standards are met.</p> <p>All waters of the State</p>																

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		Flow Regime				Sediment Production			Riparian Processes					Estuary Processes		
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3
<p>ODEQ: Point Source and Stormwater Permits</p> <p>Federal Clean Water Act; ORS 468B.035, 030 & 050; OAR 340-045.</p>	<p>DEQ issues point source water quality permits to protect surface and ground waters of the state. These permits regulate sewage and industrial wastewater discharges from industrial and municipal sources. Stormwater permits are required for and regulate storm water discharges to surface waters from: construction activities (that disturb greater than 1 acre); industrial activities (subject to federal permitting requirements determined by SIC codes); and municipalities of all sizes located in urbanized areas as defined by the US Census.</p> <p>All waters of the State</p>													ALL: Buffer Condition & Control Structures		
<p>ODEQ: Environmental Clean Ups</p> <p>Various Federal Laws; ORS465; OAR 340-122</p>	<p>DEQ's Environmental Cleanup Program protects human health and the environment by identifying, investigating, and remediating sites contaminated with hazardous substances. The Cleanup Program's objective is to guide all sites to No-Further-Action (NFA) determinations as quickly and inexpensively as possible. DEQ has issued over 1,000 NFAs since 1994, some of which include institutional or engineering controls to manage site risks.</p> <p>All waters of the State</p>													ALL: Buffer Condition & Control Structures		
<p>ODEQ: Water Quality Monitoring</p> <p>Federal Clean Water Act; ORS 468B.035; ORS 468.035 (1)(b)</p>	<p>States need comprehensive water quality monitoring data and assessment information on environmental conditions and trends to help set levels of protection in water quality standards and to identify emerging water quality issues and problem areas that need additional regulatory and non-regulatory actions to support water quality management decisions such as TMDLs, NPDES permits, enforcement, and non-point source management. DEQ's monitoring falls into three broad categories: status and trends; pollution source identification and quantification (TMDL's), compliance monitoring for standards and permits; and effectiveness monitoring of water quality pollution management programs.</p>	N/A														

Program and Guidance	Description, Status, Jurisdiction	Causal Pathways leading to Habitat Limiting Factors																
		Flow Regime				Sediment Production			Riparian Processes					Estuary Processes				
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3		
<p>Oregon Department of Forestry (ODF): Oregon Forest Practices Act (FPA)</p> <p>ORS Chapter 527, OAR Chapter 629</p>	<p>The FPA guides forest practices on private forest lands to promote economically sustainable harvest of forest trees and as the leading use on such land. FPA guidelines include a number of measures to ensure the conservation of other resources (soil, air, water, fish/wildlife) including: Road construction and maintenance must allow the migration of adult and juvenile fish during conditions when fish movement in that stream normally occurs. The FPA requires fish passage to be maintained for roads constructed after 1994, and for all other roads the FPA encourages this standard. For roads constructed prior to 1994, other statutes apply that are outside the jurisdiction of the Department of Forestry.</p> <p>The water protection rules protect, maintain and, where appropriate, improve the functions and values of streams, lakes, wetlands, and riparian management areas. These functions and values include water quality, hydrologic functions, the growing and harvesting of trees, and fish and wildlife resources. The Water Protection Rules include measures to avoid increases in stream temperature, including general vegetation retention prescriptions for streams, lakes and wetlands. To maintain or enhance habitat complexity and off-channel habitat availability, the FPA regulates slash treatment, reforestation, chemical applications, road construction, harvesting, vegetation requirements in riparian areas, and hauling. Statutes and administrative rules vary for each practice. For fine sediment for example, the FPA regulates slash treatment, road construction & maintenance, timber harvesting practices, and hauling. Rules vary for each practice. Each set of rules is designed to prevent or minimize sediment or debris delivery to waters of the state and to meet clean water standards. Restoration activities require a site specific, written plan that is completed with consultation of ODF foresters and ODFW staff.</p> <p>ODF foresters work with landowners and operators to assist, educate, and enforce the statutes and rules. A statewide monitoring program assesses compliance with the rules and rule effectiveness at achieving objectives.</p> <p>Program is active & ongoing. Recent updates to the FPA include wet weather hauling rules, road drainage, and increased vegetation retention buffer on small and medium streams with identified salmon, steelhead, or bull trout distribution in Western Oregon.</p>	PF: Rural Road Network							PF: Rural Road Network & Forest Activity									

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<p>ODF: State Forest Program</p> <p>ORS Chapter 527, 530, OAR 629-035-0000 through -0110, OAR 629-640-0100 & -0200 through -0440, Northwest Oregon State Forests Management Plan, Forest Roads Manual, ODFW rules/statutes, OWEB guidance on fish passage</p>	<p>The Program implements actions related to roads and harvest activities to minimize fish passage issues and sediment delivery: Roads are built and maintained according to the standards of the Forest Roads Manual. Stream crossings are surveyed at the watershed scale to identify locations of potential effects to fish passage. (This is usually conducted through the watershed analysis process.). Based on these surveys, actions are taken to improve fish passage, reduce hydrologic connectivity, potential for road failure, and other potential sediment impacts. The buffers specified by the FMP are designed to prevent disturbance in the near stream area that might otherwise result in sediment delivery to streams.</p> <p>The State Forest Program applies standards that include wider riparian buffers than called for under the FPA. The State Forest Program applies standards that are designed to increase the development of riparian large wood to restore aquatic habitats. Where appropriate, the Forest Management Plan (FMP) promotes the use of alternative vegetation treatments to accelerate the development of large wood.</p> <p>Active restoration is also applied to improve habitat complexity. Restoration projects include wood placement and re-routing of roads away from streams. Priority areas for restoration are generally identified through the watershed analysis process. Finally, ODF conducts monitoring to ensure that actions are applied properly and to evaluate the effectiveness of these actions.</p> <p>Finally, monitoring is conducted. ODF evaluates the effectiveness of its riparian strategies through its adaptive management program.</p>	SF: Rural Road Network						PF: Rural Road Network & Forest Activity		SF: Stand Composition		SF: Legacy Effects	SF: Buffer Conditions				

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<p>Oregon Department of Fish and Wildlife (ODFW): Fish and Wildlife Habitat Mitigation Policy, Scientific Take, Fish Transport</p> <p>ORS 496.012, 496.138, 506.109</p> <p>OAR 635-007-0600 to 007-0900 OAR 635-415-0000 to -0025</p>	<p>ODFW comments on land and water use activities under the guidance of the Fish and Wildlife Habitat Mitigation Policy. ODFW also regulates where fish may be removed (take) and stocked (transport) within Oregon's habitat.</p>	ALL: Advisory and Permitting Nexus															
<p>ODFW: In-Water Blasting and Timing of In-Water Work</p> <p>ORS 496.012, 496.138, 506.109 OAR 635-425-0000 to -0050</p>	<p>ODFW regulates in-water blasting and provides in-water work timing guidelines, which guide when activities may be conducted in waters of the state to minimize impacts to fish, wildlife, and their habitats, in coordination with other regulatory authorities.</p>	Not determined															
<p>ODFW: Fish Passage Program</p> <p>Laws regarding fish passage may be found in ORS 509.580 through 910 and in OAR 635, Division 412.</p>	<p>The owner or operator of an artificial obstruction located in waters in which native migratory fish are currently or were historically present must address fish passage requirements by gaining approval from ODFW prior to certain trigger events. Trigger events include installation, major replacement, a fundamental change in permit status (e.g., new water right, renewed hydroelectric license), or abandonment of the artificial obstruction. In addition, ODFW maintains a list of highest priority passage sites to guide implementation of passage projects over time.</p> <p>Artificial obstructions located in Oregon waters in which native migratory fish are currently or were historically present.</p>	ALL: Water Control Structures															

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Program and Guidance	Description, Status, Jurisdiction	Causal Pathways leading to Habitat Limiting Factors													
		Flow Regime				Sediment Production			Riparian Processes				Estuary Processes		
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2
<p>ODFW Instream water rights</p> <p>Laws regarding instream water rights ORS 537.332 to 537.360 and in OAR 635 division 400 and OAR 690 division 77</p>	<p>It is the policy of the state, through the Oregon Department of Fish and Wildlife (ODFW), the Oregon Department of Environmental Quality, and the Oregon Parks and Recreation Department and enabling statutes to apply for ISWRs on waterways of the state to conserve, maintain, and enhance aquatic and fish life, wildlife, fish and wildlife habitat, water quality, and recreational values for the benefit of present and future generations of the citizens of this state. ODFW is the primary agency in the state that applies for instream water rights in Oregon.</p>														
<p>Oregon Department of Land Conservation and Development (ODLCD): Statewide Comprehensive Land Use Planning</p> <p>ORS 197, ORS 195, ORS 215, ORS 227</p>	<p>Oregon's statewide comprehensive land use program requires cities and counties to plan for and manage land use in compliance with 19 statewide planning goals. Goal 5 requires local protection programs for significant natural resources, including fish and wildlife habitat such as freshwater wetlands and riparian areas. Goal 16, 17 and 18 are the coastal statewide planning goals, which include the protection of estuaries, coastal shorelands and beaches/dune. Goal 16 required the development of estuarine management plans adopted by local jurisdictions and has prohibited development in 98% of the remaining estuarine wetlands. Goal 17 requires protection for major marshes along Oregon's coastal shore lands. Less directly, Goals 6 (Air, Water and Land Resource Quality) and 7 (Natural Hazards) may address wetland management for water quality and flood management purposes.</p> <p>Local land use plans and ordinances must be consistent with the statewide planning goals. This includes the identification and protection of natural resources and hazards. The statewide land use program provides a framework for local governments to adopt land use plans and ordinances and approve development that are salmon friendly.</p> <p>Implementation is on-going. Plans and ordinances are updated according to local needs and as a result of legislation.</p>	UR: Roads/Culverts	UR: Flow Extraction & Regime	UR: Impervious surfaces			UR: Impervious Surfaces		UR: Revetments		UR: Buffer Condition & Control Structures			UR: Development	

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Program and Guidance	Description, Status, Jurisdiction	Causal Pathways leading to Habitat Limiting Factors														
		Flow Regime				Sediment Production			Riparian Processes				Estuary Processes			
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3
<p>Oregon Department of State Lands (ODSL): Removal-Fill Program</p> <p>ORS Chapter 196.795 - 990 and ORS Chapter 390.835; OAR 141-085-0005 - 0165.</p>	<p>Oregon's Removal-Fill Law is administered by the Department of State Lands Waterways and Wetlands Conservation Division whose mission is to conserve and protect waters of the state (streams, wetlands, lakes, estuaries). The law requires people who plan to remove or fill material in waters to obtain a permit from DSL. By offering a streamlined General Authorization for projects with minimal impacts (i.e., bioengineering methods and planting instead of riprap), the permit process encourages applicants to design projects with minimized impacts to water quality. Coordination with other state agencies in administering the removal-fill program is required under the agency's State Agency Coordination Plan. All permits issued by DSL include conditions that require protection of water quality, including turbidity monitoring and sediment and erosion control. Proposed permanent impacts to in-stream, off-channel, and side-channel habitat are required to be offset with compensatory mitigation actions such as riparian planting or large wood placement.</p> <p>Waterways to the ordinary high-water mark and wetlands that meet the three wetland indicators described in the Corps of Engineers' 1987 Wetlands Manual</p>															
<p>ODSL: Essential Indigenous Anadromous Salmonid Habitat</p> <p>ORS 196.810</p> <p>OAR 141-102</p>	<p>ODSL, with consultation of ODFW, designates Essential Indigenous Anadromous Salmonid Habitat (ESH), which includes the identification of spawning and rearing habitat for state or federally listed anadromous salmonids. The DSL 50 cubic yard exemption under the Oregon Removal Fill Law is not applicable in ESH and DSL requires a permit for any amount of removal or fill in areas designated ESH, unless otherwise an exempt activity.</p>															

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Program and Guidance	Description, Status, Jurisdiction	Causal Pathways leading to Habitat Limiting Factors															
		Flow Regime				Sediment Production			Riparian Processes					Estuary Processes			
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	
<p>Oregon Water Resources Department (OWRD):</p> <p>Water Use Applications:</p> <p>Water Availability Program</p> <p>Basin Programs</p> <p>Fish and Fish Habitat Protection</p> <p>New Instream Water Rights</p> <p>OAR 690-009, -033, -051, -077, -310, -500 to -520; ORS 536 and ORS 537</p>	<p>Surface waters in many areas of the state are fully allocated during critical low flow periods for fish. Several aspects of the application review process for new water rights are protective of fish and fish habitat.</p> <p>All new groundwater applications are evaluated to determine whether the use would cause the potential for substantial interference with surface flows, along with any impacts to existing instream water rights.</p> <p>The Department has created and maintains a database of the amount of surface water available for allocation for most of the waters of the state. The database is used to evaluate applications for new uses of surface water. Water availability is the amount of water that can be appropriated from a given point on a given stream for new out-of-stream consumptive uses. It is obtained by subtracting existing in-stream water rights and out-of-stream consumptive uses from the natural stream flow. Surface water availability is determined statistically, on a monthly timescale at an 80% exceedance level.</p> <p>Water use applications are subject to additional public interest review standards that include interagency consultation on potential impacts to water quality and sensitive, threatened, and endangered fish species. Permit applications, if approved are conditioned to mitigate impacts identified through this review process.</p> <p>The Water Resources Commission is responsible for the establishment of policy and procedures for the use and control of the state's water resources. In executing this responsibility, the Commission develops, adopts, and periodically modifies programs for the state's major drainage basins. Basin programs are administrative rules which establish water management policies and objectives, and which govern the appropriation and use of the surface and ground water within each of the respective basins. The rules classify surface and ground waters according to the uses which are permitted, may establish preferences among uses, may withdraw surface and groundwaters from further appropriation, may reserve waters for specified future uses, and may establish minimum perennial streamflows. These rules are in addition to rules with statewide applicability which govern the allocation and use of water. The Department has Basin Programs for all OWRD Administrative Basins with coastal rivers and tributaries: North Coast Basin, Mid-Coast Basin, Umpqua Basin, Rogue Basin, South Coast Basin. These Basin Programs classify streams for different uses, including fish and wildlife, and set minimum perennial streamflows for some streams and their tributaries at specific times of year. For example, most recently for a coastal stream, the Commission classified the waters of the Smith River in Curry County for instream purposes.</p> <p>Oregon has authority to establish instream water rights, where needed, to protect base flows, and continues to work on resolving protested instream water right applications. Three agencies—the Department of Environmental Quality, Department of Fish and Wildlife, and Parks and Recreation Department—may submit applications for instream water rights to the Water Resources Department.</p> <p>See water distribution and regulation for more information on instream water rights.</p>	ALL: Instream Flow															

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		Flow Regime				Sediment Production			Riparian Processes					Estuary Processes	
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2
<p>OWRD:</p> <p>State Scenic Waterways:</p> <p>OAR 690-310; ORS 390.805 to 390.925;</p>	<p>In 1970, the people of Oregon established the Scenic Waterways Program through a ballot initiative. The program is managed by the Oregon Parks and Recreation Department (OPRD). The goals of a Scenic Waterway include protecting the free-flowing character of designated rivers and lakes; protecting and enhancing scenic and natural values, including recreation, fish and wildlife; protecting private property rights; and encouraging agencies to act consistently with the goals of scenic waterways management. New scenic waterways are studied by Oregon State Parks, and the Oregon Parks and Recreation Commission with concurrence from the Oregon Water Resources Commission recommend designation of new scenic waterways to the Governor. Oregon State Parks has signaled that they intend to study the South Umpqua River next.</p> <p>Before any new water rights can be issued within or above a new State Scenic Waterway, the Oregon Water Resources Commission is required to set flows to maintain the free-flowing character of the waters in quantities necessary for recreation, fish, and wildlife uses. These flows are deducted from the amount of water available for new water allocations. Recently added state scenic waterways include segments of the Chetco, Mollalla, and Nehalem Rivers.</p> <p>New impoundment structures, such as reservoirs, are not allowed on the designated reach or within a quarter mile of the designated reach. Off-channel reservoirs may still be allowed outside of the quarter mile of the reach.</p> <p>Scenic waterway flows are subtracted from the total amount of water available for allocation to new surface water rights that are applied for after designation and that would withdraw water within or above the Scenic Waterway. New water permits issued within or above a scenic waterway contain conditions that allow the right to be regulated if the Scenic Waterway flows are not being met.</p> <p>OWRD may issue new groundwater rights within or above a Scenic Waterway unless it determines that: a) the proposed diversion measurably reduces surface water flows in the Scenic Waterway, b) there is no surface water available for additional allocation, and c) all new groundwater appropriations will cumulatively reduce Scenic Waterway flows by 1 cfs or 1 percent of the average daily flow by month, whichever is less.¹ In these instances, OWRD may deny the permit unless mitigation is provided.</p> <p>A list of all state scenic waterways can be found here: www.oregon.gov/oprd/BWT/Pages/SSW-list.aspx</p>	ALL: Instream Flow													

¹ The 1.0 cfs or 1 percent in this instance is separate from the 1.0 cfs or 1 percent allocated to human consumption permits discussed above

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		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3
<p>OWRD: Oregon Plan for Salmon and Watersheds Streamflow Restoration Priorities</p>	<p>The Oregon Plan for Salmon and Watersheds measures for the Water Resources Department include a variety of actions targeted to priority watersheds and streams to incrementally aid in improving salmonid habitat throughout the state. The measures are intended to support recovery efforts by encouraging voluntary efforts by water users to preserve and enhance streamflow's and by ensuring that the use of water is consistent with state water law and the terms and conditions of water rights (also see water use measurement strategy below).</p> <p>OWRD developed updated measures in February 2003 to focus on actions that have the greatest potential for success in high priority watersheds addressing three key desired outcomes: (1) maintenance and restoration of streamflow's, (2) fish passage at all instream structures, and (3) protection against salmonid mortality. OWRD and ODFW jointly identified priority areas for streamflow restoration in basins throughout the state. These priority areas represent watersheds in which there is a combination of need and opportunity for flow restoration to support fish recovery efforts under the Oregon Plan for Salmon and Watersheds. A summary of the prioritization process and the criteria used in establishment of the priorities is available at the OWRD website.</p> <p>OWRD staff work with water rights holders to restore streamflow through voluntary flow restoration measures. Voluntary measures to restore instream flows include in-stream leases, in-stream transfers, allocations of water conserved through improved efficiencies, and changes to existing rights including consolidation or point(s) of diversion transfers. In addition, in certain circumstances, reclaimed water from certain municipal, industrial and confined animal feeding operations may provide an effective alternative to new diversions of surface water or groundwater. More information on voluntary measures is included below.</p>		ALL: Instream Flow													
<p>OWRD: Instream Flows and Streamflow Restoration OAR 690-018, 077, 380; ORS 537.348, 537.455 to 537.500, 540.505 to 540.560 Transfers – OAR 690-380; ORS 540.505 to 540.560 & 540.585</p>	<p>OWRD can approve new instream water rights to protect water instream or approve changes of existing water rights to instream purposes.</p> <p>Water Right Transfers: Water rights are appurtenant to the land and pass from owner to owner when the land is sold. A water right may only be used for the purpose(s) authorized under the right at the location identified in the right. Most changes in the use of water rights may only be made after approval by the Water Resources Department for a Water Right Transfer. A transfer may approve changes in the place of use, point of diversion, or character of use of a water right. Existing water rights can be changed to instream use (instream transfer). In reviewing applications to transfer water rights, the Department must determine that another existing water right will not be injured by the change, including existing instream water rights.</p>		All: Instream Flow													

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Program and Guidance	Description, Status, Jurisdiction	Causal Pathways leading to Habitat Limiting Factors														
		Flow Regime				Sediment Production			Riparian Processes					Estuary Processes		
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3
<p>OWRD:</p> <p>Water Distribution and Regulation</p> <p>OAR 690-250; ORS 540.045</p>	<p>Oregon's water laws are based on the principle of prior appropriation. This means the first person to obtain a water right on a stream is the last to be shut off in times of low streamflow's. Distribution and regulation of water use for the protection of senior water rights, including instream rights, is a priority for OWRD. The state's watermasters respond to calls from water users and determine in times of water shortage, which generally occur every year, who has the right to use water. Staff also work to eliminate unauthorized uses of water, typically through voluntary compliance, but also through formal enforcement if necessary.</p> <p>In regards to instream water rights, OWRD staff monitor streamflow and regulate consumptive out-of-stream users that are junior to the instream water rights.</p>		All: Instream Flow													

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		Flow Regime				Sediment Production			Riparian Processes					Estuary Processes		
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3
<p>OWRD:</p> <p>Extensions of Time: OAR 690-315; ORS 537.230, 537.260, 537.630 (2), 539.010 (5)</p>	<p>Permits generally require the water user to develop the water use within five years and to comply with the terms and conditions of the permit. If additional time is needed, the permit holder may request an extension of time to complete construction and apply the water to the full beneficial use pursuant to ORS 537.230 or 537.630. An extension of time is a process in which the Department can approve additional time for a permit holder to perfect the beneficial use of water as authorized by the permit. An extension of time may provide the ability for a permit holder to extend dates to complete construction (B-date) and complete application of water (C-date).</p> <p>An extension of time may be approved if the permit holder has demonstrated reasonable diligence in developing the beneficial use of water as authorized under the permit and the Department can find good cause to do so. Up until the mid-1990s, extensions were approved on an annual basis as a matter of course. However, as water limitations have become a reality, the Department now looks at extensions more closely, particularly to determine if further development under the extension will exacerbate existing supply constraints. Resource limitations such as a fully appropriated resource or the failure to even start development (which may signal speculation) are common reasons for denial of an extension that seeks to extend the time to develop and use more water.</p> <p>In 2003, new rules were adopted for municipal permit extensions, which required a Water Management and Conservation Plan as a condition of an extension. After litigation, 2005 legislation required the development of Water Management and Conservation Plans as a condition of an extension. In addition, for permits issued prior to November 2, 1998, it required that for the first extension issued after June 28, 2005, that the use of the undeveloped portion of water be conditioned to maintain the persistence of listed fish species. The Department's finding related to fish persistence must be based upon existing data and advice from ODFW. The Department consults with ODFW and then determines if use of the undeveloped portion of the permit would maintain the persistence of listed fish species in the portions of the waterway(s) affected by water use under the permit. If the use would not maintain the persistence of listed fish species, further conditions to maintain the persistence must be placed upon the undeveloped portion of the permit. These conditions typically range from partial curtailment to full curtailment of the undeveloped portion when the target flows are not being met.</p>															

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		Flow Regime				Sediment Production			Riparian Processes				Estuary Processes			
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3
<p>OWRD:</p> <p>Water Supply and Conservation Planning</p> <p>OAR 690-086</p>	<p>The water management and conservation planning process is an opportunity for municipal or agricultural water providers to estimate long-range water supply needs, and identify potential sources of supply, including water conservation programs, to meet those needs.</p> <p>The Water Resources Department provides a template for municipalities to follow as they develop Water Management and Conservation Plans and requires municipal water suppliers to prepare plans as conditions of their water use permits or permit extensions. A municipal Water Management and Conservation Plan, or "WMCP," provides a description of the water system, identifies the sources of water used by the community, and explains how the water supplier will manage and conserve supplies to meet future needs. WMCPs also contain provisions for voluntary curtailment of water use during times of low flow.</p> <p>The Department coordinates a similar, voluntary program for agricultural entities, and provides a template for these plans as well. By using this process, irrigation districts and other suppliers can create a "water budget" for their current and future needs. Application of appropriate conservation tools may also lead to an increase in available water supplies to better meet their patrons' crop demands.</p> <p>Preparation of a plan provides a municipal or agricultural water supplier with an opportunity to proactively evaluate water management and conservation measures aimed at achieving water conveyance and water use efficiencies that may result in water savings. This, in turn, may offer a less expensive source of water supply to meet growing demands than developing new supplies.</p> <p>As such, both municipal and agricultural plans represent an integrated resource management approach for these entities to secure long-term water supplies.</p>															

<p>OWRD:</p> <p>Water Use Measurement and Reporting</p> <p>Water Use Measurement Strategy / Significant Points of Diversion</p> <p>Water Use Measurement – Water Distribution</p> <p>OAR 690-085; ORS 537.099 and the Water Resource Commission's Strategy for Statewide Water Measurement</p>	<p>Water measurement can help the Department to protect existing water right holders, facilitate planning for future water supplies, ensure use is within the limits of the water rights, maximize the beneficial uses for both instream and out-of-stream users, and prevent time-consuming and costly conflicts over water use. For water users, measurement information increases awareness of the amount of water they use and provides a basis for self-regulation. Measurement data also helps water users identify system inefficiencies, track stored water, reduce power costs, measure conservation benefits, develop improvements in their business operations, and plan for future needs. The Department promotes or requires water measurement as outlined below.</p> <p><i>Measuring and Reporting Water Use</i> . Currently, there are about 15,400 water rights that are required to measure and report water use. In 2018, the Department received water use data for approximately 12,300 water rights. Water right holders may be required to both measure and report water use as specified below:</p> <ul style="list-style-type: none"> • Pursuant to ORS 537.099, Oregon requires governmental entities such as irrigation districts, state, or federal agencies, and municipal water providers to measure and report water use. • Starting in the early 1990's, the Department began adding water measurement and/or reporting conditions to new permits, based on the size of the water right. Smaller water rights may have a condition stating that "water measurement may be required," while larger permits may have a condition that "water measurement and reporting is required." • Water users in a Serious Water Management Problem Area (SWMPA) or in a Critical Groundwater Area may be required to measure and report water use. Currently, there is one established SWMPA in the Walla Walla sub-basin, and there are seven Critical Groundwater Areas. <p><i>Measuring Water Use – Water Distribution</i>. In instances where water use measurement and reporting are not required as discussed above, the watermaster generally can require water measurement under ORS 540.310 for the purposes of water distribution and management.</p> <p><i>Measuring Water Use – 2000 Strategic Measurement Plan – Significant Points of Diversion</i>. In 2000, the Water Resources Commission developed a strategic plan for improving surface water measurement in areas with the greatest impact on streamflow's with the greatest needs for fish. The Department developed a statewide inventory of 2,385 "significant surface water diversions" within 300 high priority watersheds across the state. Significant surface water diversions included: (1) water rights that are required by the Department to measure or report through a water right condition; and (2) significant diversions in high priority watersheds. The Commission updated the plan in 2007.</p> <p><i>Measurement Cost Share Program</i>. Measuring devices can cost several hundred to several thousand dollars. The Legislature's continued capitalization of the cost-share measurement program has allowed the Department to provide funding to assist water users with installing or replacing water measurement devices on surface water diversions, reducing users' concerns about the cost of installing these devices.</p>													
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ALL: Instream Flow

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Program and Guidance	Description, Status, Jurisdiction	Causal Pathways leading to Habitat Limiting Factors														
		Flow Regime				Sediment Production			Riparian Processes				Estuary Processes			
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3
<p>OWRD: Stream Gages/Hydrographics/ Monitoring Strategy</p>	<p>The Water Resources Department operates more than 250 stream and reservoir gages throughout the state, maintaining an extensive long-term record for many of them. This network of gages informs water planning, permitting, and management decisions. About 200 of these gages are operated as near real-time and transmit data once every hour. It is the state's intent to continue to grow and maintain this network. Since 2013, the Oregon Legislature has dedicated funds to help expand and maintain the state's stream gaging network. This network of stream gages is important in the management of Oregon's surface water and groundwater resources. It is used by a variety of agencies and other entities for making daily decisions, protecting, and monitoring instream flows, forecasting floods, designing infrastructure such as bridges and culverts, planning for recreational activities, better understanding how much water is available for new uses, and tracking long-term trends such as climate change and drought. A 2016 Oregon Water Resources Department Monitoring Strategy provides guidance for the Department to consider in prioritizing its streamflow monitoring efforts.</p>		ALL: Instream Flow													

Table A-IV: 3. Description of non-regulatory mechanisms implemented by the State of Oregon that support aquatic habitat conservation and restoration in freshwaters and estuaries, and their applicability to the causal pathway categories and the codes in Table 23 a-d (where determined) of the ODFW CMP (Appendix III). Land use categories applicable to a program and particular causal pathway category are: ALL= All land types; FF= Federal Forest; SF = State Forest; PF = Private Forest; AG = Agricultural/Rural; UR = Urban/Rural Residential; O = Other.

Program and Guidance	Description, Status, Jurisdiction	Causal Pathways leading to Habitat Limiting Factors														
		Flow Regime				Sediment Production			Riparian Processes				Estuary Processes			
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3
<p>Oregon Department of Agriculture (ODA): Soil and Water Conservation Districts</p> <p>Organized under ORS Chapter 568 and governed by elected board of directors who serve without pay</p>	<p>SWCDs identify and address natural resource concerns within their respective boundaries and work w/ local, state, federal and private interests to deliver conservation services.</p> <p>On-going</p> <p>All lands within district boundaries</p>		ALL: Water Extraction & Flow Regime				ALL: Road Network & Ag Activities				ALL: Stand Composition & Flow Control & Channel Structure	ALL: Buffer Condition & Control Structures				ALL: AG Activities
<p>ODA: Strategic Implementation Areas</p> <p>Initiative by Board of Agriculture Resolution</p>	<p>The Strategic Implementation Areas (SIA) initiative further concentrates technical and financial resources to agricultural areas to address water quality concerns. ODA works with landowners to institute conservation actions which work to improve water quality, enhance aquatic habitat, as well as achieve watershed health and ecological "uplift" above conditions required for compliance. Specific actions include: removal of agricultural activities from streamside areas, installation of streamside fencing to exclude grazing, placement of large woody debris into streams, restoration of riparian meadows, removal of fish passage barriers (culverts), installation of off-stream watering troughs, construction of hardened stream crossings, development of prescribed grazing management plans, treatment of invasive plants, construction of composting systems, improved manure management disposal and cover, adopting conservation tillage and cover, converting to gated or drip pipe irrigation systems, along with assisting landowners develop overall facility plans for water management, erosion control and farm conservation.</p>	Various depending on project														

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		Flow Regime				Sediment Production			Riparian Processes					Estuary Processes			
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	
<p>ODA: Weed Control Program ORS 561.685</p>	<p>Controlling invasive noxious weeds is a critical component in achieving success in areas of water quality, water quantity and fish and wildlife habitat preservation. ODA staff collaborate with private landowners, county weed programs, state and federal land managers, and other cooperators to implement integrated weed management projects throughout their regions. The program is focused on Early Detection and Rapid Response for new invading noxious weeds, implementation of biological control, completion of statewide weed inventory and surveys, technology transfer and noxious weed education, noxious weed data maintenance, weed risk assessments, and maintenance of the Noxious Weed Policy and Classification System.</p> <p>Non-regulatory program – weed control statewide (Federal, State, Public and Private lands)</p>								ALL: Stand Composition					ALL: Buffer Condition			

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		Flow Regime				Sediment Production			Riparian Processes			Estuary Processes		
		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1
<p>Oregon Department of Forestry (ODF): Landowner Assistance Program (Protection from Fire and Private Forest Division)</p> <p>ORS Chapter 527, 526 Woodland Management Act of 1979. ORS 526.450</p>	<p>The Landowner Assistance within the Oregon Department of Forestry provides a wide array programs that are coordinated with partner natural resource agencies. These programs help address forest management planning, forest health, fuels reductions and community preparedness, and overall watershed health by assisting forest landowners and managers. The programs below are a list of these programs and partnerships:</p> <ul style="list-style-type: none"> • Fuels Reduction & Community Preparedness – WSFM / Community Assistance – Funds provided by USFS State & Private Forestry enable our field staff and crews to assist landowners with defensible space, fuels reduction projects, and community wildfire planning/preparedness. • Forest Health Treatments – ODF implements a number of USFS State & Private Forestry grant programs that enable us to address forest threats such as Sudden Oak Death and Bark Beetle and include funds for both technical and financial assistance. • Statewide NRCS Agreement – Through a statewide agreement with the Natural Resources Conservation Service (NRCS), ODF Stewardship Foresters help forest landowners access NRCS cost share programs like the Environmental Quality Incentives Program (EQIP), which provides assistance with forest treatments intended to address important conservation concerns, including forest fuels. • Post Fire Restoration – ODF helps landowners access the Farm Service Agency's Emergency Forest Restoration Program for assistance following wildfires and other natural disasters. • Forest Management Planning – Through the USFS Forest Stewardship Program, ODF provides cost share to assist landowners with the development of a management plan, which includes sections that address fuels and community preparedness. Planning is an important consideration for access to many cost-share programs. The Forest Stewardship Program also provides base funding for our landowner assistance programs. <p>All waters of the State</p>	Variable												

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		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3
<p>Oregon Department of Fish and Wildlife (ODFW): Oregon Conservation Strategy</p> <p>USFWS and Association of Fish and Wildlife Agencies guided the development and review process for the Strategy. For guidance on the implementation, see the Oregon Conservation Strategy document: http://www.dfw.state.or.us/conservationstrategy</p>	<p>The Oregon Conservation Strategy provides a non-regulatory, statewide approach to species and habitat conservation. It synthesizes existing plans, scientific data, and local knowledge into a broad vision and conceptual framework for long-term conservation of Oregon's native fish, wildlife and habitats. Conservation of instream and upland habitats will promote watershed health.</p> <p>The Oregon Conservation Strategy is meant to apply to all lands, rivers, streams, and estuaries in Oregon.</p>	ALL: Planning and Implementation Nexus														
<p>ODFW: Fish Screening and Passage Grant Program</p> <p>Laws regarding passage, screening, and cost share can be found in ORS 315.138, 496.085, 496.141, 496.303, 497.124, 498.301 through 346, 509.580 through 910, 537.141, 540.525, and in OAR 635, Division 412.</p>	<p>Oregon water users may be eligible for an ODFW cost-share incentive program and state tax credit designed to promote the installation of ODFW approved fish screening or fish passage devices. Fish screens prevent fish from entering water diversions. Fishways provide fish passage to allow migration. ODFW works with owners who apply for funding, as well as actively seeks projects at which to provide fish screening and passage.</p> <p>Oregon water users including independent agriculture users, private domestic users, municipal water suppliers, irrigation districts and commercial industries.</p>	ALL: Water control structures														

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		1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	3.4	3.5	4.1
<p>ODFW: Habitat Resources Program</p> <p>Info. for Landowner Incentive Program (LIP), Access and Habitat Program, Bird Stamp Program, Riparian Lands Tax Incentive Program, and Wildlife Habitat Conservation and Management Program) can be found at http://www.dfw.state.or.us/wildlife/grants/index.asp</p>	<p>The Wildlife Division Habitat Resources Program helps guide land-use activities in Oregon that affect fish and wildlife habitats. The Program offers tax incentives, grants and technical assistance to private and public landowners, businesses, and governments to help conserve fish and wildlife habitats, and to ensure environmental protection standards are met. Program goals promote healthy riparian and wetland corridors – decreasing bank erosion and filtering run-off.</p> <p>All owners of private and public land in Oregon interested in conserving fish and wildlife habitats.</p>	ALL: Technical Assistance and Restoration Funding												
<p>ODFW Water Quality and Quantity Program</p>	<p>The Water Quality/Quantity Program develops science and policy direction for the agency associated with water quality and quantity needs of fish and wildlife. The program focuses on developing flow and temperate targets necessary in both regulatory and voluntary processes. The program is active in legally protecting water through instream water rights. The program provides comments to Water Resources Department regarding water use applications, permit extensions, or transfers of use. Because ODFW is the agency with fish and wildlife expertise, the Water Resources Department is often bound by these comments and sometimes will alter conditions regarding water use based on these comments to protect fish and wildlife and their habitats (flow, temperature, wetlands, and riparian areas). The hydropower program, within the Water Program, participates in proceeding related to hydroelectric power development in order to protect the natural resources of Oregon (ORS 543.015). Program staff are often called upon to advise water quality programs because the beneficial use being impaired by a lack of water quality are often fish and wildlife species.</p>	ALL: Planning and Implementation Nexus												

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<p>ODFW: Restoration and Enhancement Program</p> <p>OAR's 635-009-0200 through -0240; Stat. Auth.: ORS 512</p>	<p>ODFW oversees a comprehensive program to assist in enhancing natural fish production, improve hatchery programs, and provide additional public access to fishing waters. To achieve these goals, the R & E Program provides funding that directly benefits fish by addressing items such as fish passage, habitat restoration, public education, research, and monitoring.</p> <p>All streams, rivers, lakes, and estuaries in Oregon.</p>	ALL: Restoration Funding																	
<p>ODFW: Salmon Trout Enhancement Program</p> <p>OAR's 635-009-0090 through -0150; Stat. Auth.: ORS 496</p>	<p>The Salmon and Trout Enhancement Program (STEP) recognizes that volunteers play an important role in the restoration of salmon, steelhead, and trout. STEP (1) educates the public about Oregon's salmon and trout resources and the habitats they depend on, (2) inventories and monitors fish populations and their habitat, (3) enhances, restores, and protects habitat for native stocks of salmon, steelhead, and trout.</p>	ALL: Volunteer Support																	
<p>Oregon Department of State Lands (ODSL): Wetlands Program</p> <p>ORS Chapter 196.600 - 692; OAR 141-085-0240 - 0257 and 0610 - 0660</p> <p>https://www.oregon.gov/DSL/WW/Documents/oregon_wetland_program_plan.pdf</p>	<p>The Wetlands Program was established by statute in a 1989 comprehensive wetlands conservation bill. The Program is responsible for developing and maintaining the Statewide Wetland Inventory, providing wetland planning assistance, developing standards and tools, and providing public information and training. The Oregon Wetland Plan describes several activities that can increase restoration and protection of wetland resources.</p>													ALL: Buffer Condition & Control Structures					ALL: Buffer Condition

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<p>Oregon Watershed Enhancement Board (OWEB): CREP Program</p> <p>ORS 541.351 - 541.420 and OAR 695-001-0000 through 695-050-0050</p>	<p>The Conservation Reserve Enhancement Program (CREP) is a voluntary program for agricultural landowners. CREP is a state and federal partnership that allows landowners to receive incentive payments and conservation rental payments from the USDA Farm Services Agency for establishing long-term riparian buffers on eligible land. In addition to providing partial funding to direct landowner payments for conservation activities, OWEB has participated in providing funding for outreach, technical assistance, and program coordination. The Oregon Departments of Agriculture, Forestry and Water Resources have also assisted in CREP implementation and coordination.</p> <p>Agricultural lands</p>																<p>AG: Restoration Funding / Technical Assistance</p>
<p>OWEB: Open Solicitation Grant Program</p> <p>ORS 541.890 - 541.972 and OAR 695-001-0000 through 695-046-0230</p>	<p>OWEB's open solicitation grant program supports voluntary efforts by Oregonians seeking to maintain and restore native fish and healthy watersheds. OWEB funds projects that restore, maintain, and enhance the state's watersheds, supports the capacity of local watershed-based citizen groups to carry out a variety of restoration projects, promotes citizen understanding of watershed needs and restoration ideas, provides technical skills to citizens working to restore urban and rural watersheds, and monitors the effectiveness of investments in watershed restoration. Depending on the grant type, OWEB grants are awarded every 6 months, once per year, or once per biennium for restoration and protection of ecological resources. Grant applications are reviewed by a multidisciplinary team to develop recommendations and prioritization of grant applications for OWEB consideration. The review teams evaluate whether the grant applications address limiting factors and the technical soundness of the proposals.</p> <p>All lands</p>																<p>ALL: Restoration, Land and Water Acquisitions, Technical Assistance, Monitoring, Stakeholder Engagement and Other Funding</p>
<p>OWEB: Partnership Investments</p>	<p>OWEB's partnership investments are a means by which OWEB works closely with partners and utilizes a process different from open solicitation grants to invest in longer-term activities intended to result in larger-scale ecological outcomes. Ideally, a partnership investment contributes to a historic change or surge of progress in the recovery of a species, the restoration of an ecosystem, or the launching of an initiative that addresses widespread issues. Examples include Focused Investment Partnerships and Strategic Implementation Areas.</p>																<p>ALL: Restoration Land and Water Acquisitions, Technical Assistance, Monitoring, Stakeholder Engagement and Other Funding</p>

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<p>Oregon Water Resources Department (OWRD): (under the Oregon Plan for Salmon and Watersheds and Integrated Water Resources Strategy)</p> <p>Streamflow Restoration Priorities</p> <p>OAR 690-018, 077, 380</p>	<p>The Oregon Plan measures which the Water Resources Department is committed to implementing under the Oregon Plan for Salmon and Watersheds include a variety of actions targeted to priority watersheds and streams to incrementally aid in improving salmonid habitat throughout the state. Within the existing legal framework, the measures are intended to support recovery efforts by encouraging voluntary efforts by water users to preserve and enhance streamflow's and by ensuring that the use of water is consistent with state water law and the terms and conditions of water rights.</p> <p>The Department developed updated measures in February 2003 (http://www.oregon.gov/owrd/pubs/docs/reports/opsw_wrd_plan.pdf) to focus on actions that have the greatest potential for success in high priority watersheds addressing three key desired outcomes: (1) maintenance and restoration of streamflow's, (2) fish passage at all instream structures, and (3) protection against salmonid mortality.</p> <p>The WRD and ODFW jointly identified priority areas for streamflow restoration in basins throughout the state. These priority areas represent watersheds in which there is a combination of need and opportunity for flow restoration to support fish recovery efforts under the Oregon Plan for Salmon and Watersheds. WRD is focusing its efforts to aid in recovery of salmonids on these priority areas. A summary of the prioritization process and the criteria used in establishment of the priorities is available at the WRD website. ODFW is currently updating these priorities.</p> <p>OWRD staff work with water rights holders to restore streamflow through voluntary flow restoration measures. Voluntary measures include in-stream leases, in-stream transfers, allocations of water conserved through improved efficiencies, and changes to existing rights including consolidation or transfers of points of diversion. In certain circumstances, reclaimed water from certain municipal, industrial and confined animal feeding operations may provide an effective alternative to new diversions of surface water or ground water.</p> <p>With few exceptions, all surface and ground waters of the state</p>															

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<p>OWRD:</p> <p>Instream Leases – OAR 690-077; ORS 537.348</p>	<p>Instream Leases: Oregon's Instream Leasing program provides a voluntary means to aid the restoration and protection of streamflow's. This arrangement provides benefits both to water right holders and to instream values by providing water users with options that protect their water rights while temporary leasing the water to instream beneficial use.</p> <p>Allocations of Conserved Water: The Allocation of Conserved Water Program allows a water user who conserves water to use a portion of the conserved water on additional lands, lease or sell the water, or dedicate the water to instream use. Use of this program is voluntary and provides benefits to both water right holders and instream values.</p>		ALL: Instream Flow													
<p>OWRD:</p> <p>Water Supply Development Account: Seasonally Varying Flows and Water Dedicated Instream for Certain Above Ground Storage Facilities</p> <p>OAR 690-93; ORS 541.651 and 541.689</p>	<p>The Water Supply Development Account help funds instream and out-of-stream water supply projects that result in economic, environmental, and social/cultural benefits. This competitive funding opportunity funds a variety of project types including conservation, storage, flow restoration and protection, reuse, and other water supply infrastructure. Projects must achieve benefits in each of three categories: environmental, economic, and social/cultural. Environmental benefits include measurable increases in legally protected streamflow, increased ecosystem resilience to climate change, water conservation, measurable improvements to water quality, measurable improvements to groundwater levels, and improvements that address limiting ecological factors in the project watershed. Certain, qualifying storage projects funded through the Water Supply Development Account are required to protect ecological flows through Seasonally Varying Flows (SVF) water right conditions and/or dedicate instream and legal protect no less than 25% of the newly developed stored water. Ongoing, as qualifying projects are funded.</p>		ALL: Instream Flow													

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<p>OWRD:</p> <p>Place-Based Integrated Water Supply Planning</p> <p>ORS 536.220 and the 2015 Draft Guidelines: A Tool for Conducting Place-Based Integrated Water Resources Planning in Oregon</p>	<p>Oregon's Integrated Water Resources Strategy (IWRS) recommends that the Department help places undertake a collaborative, integrated approach to water planning. Place-based integrated water resources planning is a voluntary, locally initiated and led effort, in which a balanced representation of water interests works in partnership with the state to understand and meet their instream and out-of-stream water needs. In 2015 the Department developed Guidelines that provide a framework for planning. The Department is a partner in these planning efforts and provides financial, technical, and planning assistance to the communities testing the guidelines.</p> <p>The Mid-Coast Water Planning Partnership is one of four groups currently testing the guidelines in partnership with the Department. This effort is co-convened by the Seal Rock Water District, Lincoln County, and OWRD. The planning area contains the coastal watersheds within Lincoln County's boundaries from Cascade Head to Cape Perpetua.</p> <p>The statute and guidelines require that these integrated water resources planning efforts balance current and future instream and out-of-stream water needs. The planning process includes the following five steps:</p> <ul style="list-style-type: none"> • Step 1: convene a balanced representation of interests in a collaborative, consensus-based process (groups representing instream interests and needs are included). • Step 2: evaluate current conditions with respect to water quantity, quality, and ecology. • Step 3: assess current and future water needs and vulnerabilities, including an assessment of instream needs using available information and should consider climate change impacts. • Step 4: identify integrated strategies and actions to meet current and future instream and out-of-stream needs. • Step 5: finalize, adopt, and implement an Integrated Water Resources Plan. <p>An interim outcome of the Mid-Coast Water Planning effort is the formation of a consortium of municipal and special districts to partner on joint conservation messaging and projects that incentivize conservation. Individual water users are finding ways to reduce their impact on instream flows by increasing conservation through automated metering infrastructure and alteration of reservoir operations. Reports documenting potential climate change impacts have been developed by the Oregon Climate Change Research Institute and the Army Corps of Engineers. The Department has partnered with OSU to develop a water supply and demand model that can be used to help the Partnership assess the effectiveness of different water supply and conservation measures on desired objectives. A Plan is expected at the end of 2021.</p>	All: Instream Flow														

References

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