

Design Criteria Section 0035 (sorted by line 6-3-2021)

59 65 Coquille/ Coos Bay "Coquille Watershed Association (Melaney Dunne), Coos Watershed Association (Ed Hughes)" "Lines 404-405 Fish Passage Criteria C (also see line 529, 558): "Dates of the year and/or conditions when passage shall be provided" " 404

Additional specification on this criteria would be key to ensure stakeholders have a clear understanding of requirements. If minimum thresholds that are regionally established could be defined in the guidance to supplement this rule that would provide additional clarity. This is also aligned with another comment submitted by CoosWA/CoqWA regarding specification on additional information/requirements on water management plans in tidal systems. "Either in the rules or the associated fish passage guidance, providing additional information on the dates of the year and/or conditions when passage is needed for the life history stages and native migratory fish. Additional clarification on dates, specific life history stages, etc. that is regional or habitat specific would assist stakeholders in planning and implementing barrier replacements. " 2021-05-07 07:49:03

217 na ODOT "635 – 412 – 0035, Fish Passage Criteria, Line 408" 408
"This should go the other way as well. 'If the Department finds that fish passage criteria are not applicable to the stream reach conditions, then applicable criteria may be waived'. Example: The roughness and hydraulics naturally occurring in the reach are greater than those in the criteria. If the crossing creates a stable feature that emulates the reach then it should be allowed.

- This seems to address (c). However, it is rarely used by ODFW. Fairly the opposite. Perhaps there should be a petition process for ODFW to consider such.

- (e) State that fish passage structure shall not cause undo upstream and downstream lateral and vertical scour. (g) also include a maintenance requirement"

218 na ODOT "635-412-0035, Line 416, 417" 416 "Define expectation. If monitoring is required on all projects, suggest editing current language to indicate as expectation. Suggest editing current language (635-412-0035 (1)(g): "Primarily at sites with little existing site information or questionable design solutions, the Department may require monitoring and reporting to determine if a fish passage structure meets applicable criteria and/or is providing fish passage" to read "Primarily at sites with little existing site

information or questionable design solutions, The department may requires monitoring and reporting to determine if a fish passage structure meets applicable criteria and/or is providing fish passage.””

219 na ODOT "635 – 412 – 0035, Fish Passage Criteria, Line 421" 421
"Does this include ‘roughened chutes’ or steepened
natural bottomed stream grades that that pass underneath a bridge or through a culvert? It is highly advised to call out that these are excluded from this section. Past projects that this section as currently written is intended for intensely engineered features such as ladders and channels associated with water diversions and dams. There needs to be a new section that allows
for natural bottomed crossings
that may not strictly meet the current criteria."

25 31 Portland USFWS424-425 424 "Here and throughout, where relevant, consider consistency with NMFS (National Marine Fisheries Service). 2011. Anadromous Salmonid Passage Facility Design. NMFS, Northwest Region, Portland, Oregon, or the most up-to-date version of that document. For example “4.2.2.3 Attraction Flow: Attraction flow from the fishway entrance should be between 5% and 10% of fish passage design high flow (see Section 3) for streams with mean annual stream flows exceeding 1000 cfs. For smaller streams, when feasible, use larger percentages (up to 100%) of streamflow. Generally speaking, the higher percentages of total river flow used for attraction into the fishway, the more effective the facility will be in providing upstream passage. Some situations may require more than 10% of the passage design high flow, if site features obscure approach routes to the passage facility.”” "Recommend ODFW compare NMFS and ODFW criteria where relevant. To the extend that opposing criteria should be reduced or minimized. If opposing criteria, such as jump height are encountered, the metric most beneficial (smaller jump height) for example should be used. Overall this will reduce compliance issues for third parties." 2021-05-03 15:45:28

72 78 "Coos Bay, Oregon" "Myself as an owner, operater, installer, maintainer, project manager, and involed in the design and implementation of tide gates/culverts as well as a land manager in tidal waters for over fifty years." "Lines 426-427: Fish way water velocities shall: Range between 1 and 2 feet per second in transport channels Lines 530-532: Tide gates

and associated fish passage structures shall be a minimum of 4 feet wide and shall meet the requirements of OAR 635-412-0035(2) within the design stream flow range and for an average of at least 51% of tidal cycles, excluding periods when the channel is not passable under natural conditions. Lines 273 - 289: Approval of a fish passage plan Lines 148-149: Ordinary high water line Line 464: Water temperatures in fishway" 426 There is great need to simplify the process and improve the effectiveness of limited resources to address failing tide gates/culverts and the related interior infrastructure issues associated with these water control systems in tidal influenced areas.. I endorse and support the comments submitted by the Coquille and Coos Watershed Associations 2021-05-07 21:07:20

26 32 Portland USFWS426 426 "Current rule revisions do not mention the need for laminar flow. Turbulence and non-laminar flows create confusing signals for migrating fish. Velocities within fishways and at entrances should be designed for laminar flow. Minimizing turbulent flows within fishways and creating entrances with laminar flow will increase passage success for a full suite of native fish including lamprey species, juvenile of salmonids and other native fish, native suckers, etc." "Insert between Line 426 and 427: Velocities in fishways and at entrances should be designed to be non-turbulent and laminar. Auxiliary water supply, if present, should not increase turbulence or confusing flows. " 2021-05-03 15:46:38

52 58 Coquille/Coos Bay "Coquille Watershed Association (Melaney Dunne), Coos Watershed Association (Ed Hughes)" "Lines 426-427: Fishway water velocities shall: Range between 1 and 2 feet per second in transport channels Lines 530-532: Tide gates and associated fish passage structures shall be a minimum of 4 feet wide and shall meet the requirements of OAR 635-412-0035(2) within the design streamflow range and for an average of at least 51% of tidal cycles, excluding periods when the channel is not passable under natural conditions. Lines 273 - 289: Approval of a fish passage plan Lines 148-149: Ordinary high water line Line 464: Water temperatures in fishway " 426 "This comment is specific to structures located in tidally influenced streams and floodplains (tide gates and culverts). Overall, there are several rules that do not account for the hydrologic dynamics and juvenile salmonid movement behaviors uniquely observed at tide gates and associated structures compared to structures in locations that are not tidally influenced. 1. Velocity Criteria and Culvert Sizing in Tidal Systems - Unlike culverts located in streams above of tidal influence where directional flow is consistently in a downstream direction, the velocity and directional flows change four times daily in tidal systems. This complexity in tidal systems is not accounted for in current rules. As such, some requirements that are solely focused on streams outside of tidal influence are challenging to meet in a tidal system structure (tide gate and culvert). The velocity criteria could be more realistic and achievable for tide gate owners if the threshold was changed. This change would still support the goal of fish passage at these structures based on observed directional

travel of fish during tidal changes. The Oregon Watershed Enhancement Board (OWEB), technical advisors and a contractor are working to produce a "Pipe Sizing Tool" for tide gates in alignment with the Oregon Tide Gate Partnership. This tool is expected to provide a framework model that will be incorporated to determine the size of a culvert and tide gate for a given tidal location based on hydrologic parameters (velocity, gate time open). This tool will be critical in informing passage criteria however it is not yet complete and we recommend incorporating information from this tool into rule revisions pertaining to tide gate structures as the tool is finalized in 2021. Velocity is an important criteria on tide gates that impacts the cost of the structure. The cost of tide gates is directly related to the size of the infrastructure. Often the additional cost to reach a 2fps criteria in tidal locations is untenable for landowners with other sources of funding often being difficult to obtain. Time of door openness appears to be a more significant factor in supporting juvenile fish passage at tide gates and an emphasis on time open rather than velocity could help better meet passage goals and create less onerous requirements on replacements. Data on juvenile salmonid movement collected over years from multiple groups in OR and WA (ODFW, WFDW, NMFS, CoqWA) indicates that they readily move upstream through tide gates on incoming tidal flows at velocities exceeding 2fps or during periods of slack tides. Therefore, valuing time openness over velocity may help optimally meet fish passage goals at tide gates and reduce the thresholds of criteria needing to be met by tide gate owners.

2. Water Management Plans in Tidal Systems - Water management plans are a routine requirement in fish passage approval for tide gates. However, current rules do not specify this requirement. A definition of water management plan, specifying when it is required for a structure, and species specific needs that drive plan components (e.g. juvenile coho use of off-channel sites in winter months for rearing) would be helpful to specify to ensure stakeholders have a clear understanding of what is required. Enough flexibility in the rules/guidance is also critical as site specific characteristics such as salinity level, tidal range, reservoir capacity, and groundwater influence can greatly affect the scope of a specific water management plan. Lastly, water management plans are typically also required by NMFS, ideally ensuring that water management plan requirements are compatible with both state and federal agencies is key to ensure stakeholders can meet all fish passage requirements in a streamlined manner." "Note, some recommendations below may be better suited to be included in guidance than rule, however we opted to include the full scope of recommendations based on experience working on tide gate replacements with engineers, landowners, and agencies. Lines 426-427, 530-532, 273-289. Overall, fish passage at tide gates is impacted by the inter-related factors of time of door openness, velocity, and upstream reservoir capacity. It is important to recognize that the flow capability (culvert size/channel size) and upstream reservoir capacity (volume) has a significant influence on the time of door openness - this dynamic needs to be considered in designs and fish passage/water management plans. Velocity criteria should be different for tidal structures, with a higher velocity threshold in place. This is especially the case if the tide gate has capabilities to remain open for longer during incoming tides (e.g. sluice gate or MTR technology). Fish behavior monitoring is showing that native migratory fish readily move directionally with tidal flow and

are not obligatorily linked to swimming against current to enter upstream estuarine habitats. Therefore, higher criteria levels will not obstruct meeting fish passage goals when velocity drops during tide changes and it will help streamline replacements for landowners /municipalities (especially when the tide gate has technology that allows it to stay open longer during rising tides and a water management plan is in place). Specifying the level of designs and hydrologic tools required to properly size a tide gate is key to set expectations on what metrics need to be used (e.g. pool capacity upstream/channel volume) and what tools are acceptable to use (e.g. new pipe sizing tool, existing models, etc.). Having requirements for tools and metrics that are used to inform the fish passage plan/water management plan that are scalable in nature is key as some smaller sites may not be feasible to fully engineer (from a cost/benefit perspective) compared to large structures (depending on fish use of habitats in the area). Overall, clear guidance on acceptable methods will ensure stakeholder meet expectations in a streamlined, cost effective manner. Specifying what styles of gate are acceptable and when certain features would be required (e.g. some type of feature that prolongs gate openness such as a sluice style gate or mechanical MTR) is key for stakeholders to understand. At the same time, allowing for maximum flexibility to accommodate a variety of gate styles is also key as site characteristics, available fish habitat upstream and landowner goals can influence the site's fish passage needs. Line 464: Often tide gated locations cannot meet this temperature criteria. It would be preferred to have an accommodation specified for tide gates that acknowledges the realities of water temperature regimes at tide gates. Especially for summer water temperatures, we have observed that there are often differences of more than a degree (~5 degrees of difference) in upstream and downstream temperatures at tide gated locations. Depending on the site, the interior water temperature may be warmer or cooler than the exterior tidally influenced waters. Lines 148-149: For tidal zone structures using "MHHW" Mean Higher High Water, defined by NOAA as: "The average of the higher high-water height of each tidal day observed over the National Tidal Datum Epoch. For stations with shorter series, comparison of simultaneous observations with a control tide station is made in order to derive the equivalent datum of the National Tidal Datum Epoch." Adding this and applying this definition for tidal areas would be a clearer definition for stakeholders to use in tidal areas rather than the Ordinary High Water Line definition. " 2021-05-07 07:41:13

49 55 "Boise, ID - Halfway, OR" Idaho Power Company "635-412-0035—Fish Passage Criteria Lines 427 through 436. Specifically, criteria pertaining to water velocity (2 ft/sec) and water surface elevation differential (6 inches). "427 "There is a need for criteria specific to Nature-Like Fish Passage projects. Much of the existing criteria is intended for concrete fishways and is not applicable to instream projects intended to pass native fish around or through projects such as small irrigation diversions. Driving designs to meet velocity criteria near 2 ft/sec at 5% exceedance flows results in grades that cannot pass bedload and maintain design intent long-term. Nature-like passage criteria should focus on the native stream channel grade, velocities, and roughness upstream and downstream of the project area. Matching

native stream channel conditions, provided the grade meets passable criteria (<5%) ensures the project can pass bedload and maintain itself at higher velocities. The water surface elevation of 6 inches results in projects that are difficult to maintain through natural bedload transport processes. A focus on matching native stream channel grade and roughness would ensure projects can maintain bedload transport processes. Nature-like fish passage designs, with embedded roughness boulders, can pass fish at elevation differences up to 9 inches. Concrete fishways, designed for resident fish (non-anadromous) have been shown to successfully pass trout species down to Age-1. Expanding height differentials to 9 inches would allow nature-like passage projects a smaller footprint, ability to pass bedload, and still pass targeted native, migratory species. Water velocities in native stream channels (<5% grade) are much higher than existing velocity criteria. Nature-like criteria should focus on the stream simulation approach. ODFW review should focus on grade control and engineered matrices below bed that would ensure stability. If native stream channel conditions cannot be simulated, then the engineer of record should provide sufficient justification that the submitted design can pass native fish across the required flow ranges of 5-95% exceedance. ""Insert within section C, Line 478: section titled Nature-Like Fishway Criteria. a. Average water depth and velocities should simulate those in the native stream channel adjacent to nature-like passage structure. Depth and velocities should be compared at similar stream gradients between project area and adjacent, native stream channel. b. Grade control and engineered streambed through passage structure can be maintained through time. i. Grade sufficient to transport bedload through passage project area ii. Control and engineered streambed sufficient to not allow scour or head-cutting c. Substrate is similar in size and composition as adjacent stream channel i. Should contain over-sized boulders (sized at twice the diameter of the mean boulder size in project area), partially buried, to ensure velocity shadows for fish passage ii. Spacing of oversized rock should be close enough (minimum 2-foot gap) to allow velocity shadows throughout entire fish passage structure d. Maximum water surface elevation differential (non-anadromous species) should be no higher than 9 inches through fish passage structure. Differential closer to 9 inches should be mitigated with over-sized, embedded boulders to ensure conditions listed in C.(ii). above. " 2021-05-06 11:20:20

27 33 Portland USFWS248-431 431 "These appear to be criteria developed for trout and anadromous salmon, but do not state that, and do not recognize the multiple migratory fish species for which ODFW is proposing to manage and provide guidance on fish passage. For lamprey species, velocities of 5 and 8 feet per second could limit passage of Entosphenus (unless smooth continuous attachment surfaces are provided), and will limit passage of Lampetra species. " "Insert after line 431: (D) Additional criteria may be required to provide passage for all migratory fish present at the location, including but not limited to Sections [Refer to species-specific portions] " 2021-05-03 15:47:44

28 34 Portland USFWS432-434 432 "A 6 inch jump does not recognize the multiple migratory fish species for which ODFW is proposing to manage and provide guidance on fish passage. USFWS's review focused primarily on Lampetra and Entosphenus, which are species that cannot jump. Many other native migratory fish also have limited jumping ability compared to adult salmonids. To the extent possible, modern nature-like fishways without jumps and stream simulation designs (with channel designed to 1.5 times active channel width) should be considered and noted as "preferred." "At the end of line 434, add the following text: ; for areas where Entosphenus and Lampetra species require adult fish passage, there shall be no difference in the upstream and downstream water surface elevation (no rise). " 2021-05-03 15:48:54

220 na ODOT "635 – 412 – 0035, Fish Passage Criteria, Line 433" 433
"6" Jump heights: Recommend reconciliation with WA and California standards

o When and where does this criteria apply (fishways versus stream sim versus life history needs) Define in OARs, and Develop guidance outside or OARS (design manual) to assist applicants with understanding of expectation.

o Guidance, either in OAR or in design manual, should address sites where stream reaches naturally have steepened sections with jump heights above 6" up and downstream of the project. Steeper gradients in these types of systems often do not allow for a stream simulation or "natural fishway" approach to meet 6" jump heights within reason.

o In steepened stream reaches, jump height criteria should be based on species and life history use. In many cases, providing for 6" jump heights for juveniles may prevent upstream migration of adults due to streaming flow conditions during periods of adult migration. This may be scenario where ODFW District personnel can determine which life stage should be targeted for passage criteria based on population status, limiting life stages, habitat type / availability upstream of the barrier, ect. Fully seeding the stream suggests adult passage should be preference, but could vary by location and limiting life stage (upstream juvenile summer steelhead migration for example). Develop passage criteria specific to adult and juvenile life stages to reference in design manual."

221 na ODOT "635 – 412 – 0035, Fish Passage Criteria, Line 435" 435
"Potential for OARs to clarify when and how the 6" criteria will be applied – Suggest either additional language to current definition of "Fishway" to read "means the set of human-built and/or operated facilities, structures, devices, and measures that together constitute, are critical to the success of, and were created for the sole purpose of providing upstream fish passage at artificial or natural obstructions which create a discontinuity between upstream and downstream water or bed surface elevations. This includes features that span the active

channel width, constructed with the intention of providing fish passage and maintaining streambed integrity, including weirs constructed of artificial and or natural materials such as logs, boulders, or other similar structures”.

Or;

“This criteria may NOT apply to some features that are constructed for the purposes of providing fish passage and maintaining streambed integrity, provided they are constructed from natural materials, and where the stream profile in the appropriate reference reach has steep (> 3%) gradients or other physical constraints.”

WaterWatch Line 457 We support practical fish passage review for restoration work (beaver dam analogs, exclusion devices) without compromising fish-passage effectiveness.

222 na ODOT "635 – 412 – 0035, Fish Passage Criteria, Line 457" 457
"Recommend that “or Road stream crossing structure” be added following “fishway”, or add in applicable section: “passive trash racks are allowed on existing culverts (or fish ways) if set at or above the OHWE, demonstrate a need to maintain infrastructure integrity and safety, clearly demonstrate a benefit to fish passage through the culvert, and have the spacing that follows as presented in the OARs.””

245 na Conservation Angler Defintion Section: Trask Rack 457 "Typo
""Materials""

29 35 Portland USFWS469-471 469 "(2) (j) F The USFWS will be publishing Fish Passage Guideline in 2021 or 2022- the OARs should allow for the flexibility for ODFW to use this guideline document (not strict criteria). These guidelines will address passage for both bull trout and Pacific lamprey. In addition to that future document, there are two existing lamprey passage guideline documents for Entosphenus species- one Pacific lamprey passage in “standard”/salmonid fishways: Practical Guidelines for Incorporating Adult Pacific Lamprey Passage at Fishways (Lamprey Technical Workgroup 2017) And one for culvert passage: Barriers to Adult Pacific Lamprey at Road Crossings: Guidelines for Evaluating and Providing Passage (Lamprey Technical Workgroup 2020). We recommend that the OARs allow flexibility for ODFW to use these documents and, where appropriate, use or reference in ODFW’s development of fish passage guidance documents. " Throughout document as necessary; particularly sections pertaining to Pacific lamprey or Bull Trout. 2021-05-03 15:51:42

30 36 Portland USFWS475-476 475 "Denil fishways have not been evaluated for many native species including lampreys. At Warm Springs National Fish Hatchery, adult Pacific Lamprey were found dead below the denil ladder. Denil weirs should be avoided in areas where lampreys are present, or passage for other native, non-salmonid fish species."
"After line 476: Suggest adding language :“Denil fishways are not appropriate for passage of lampreys and many other native, non-salmonid fish species. In areas where native fish species require passage, but that passage of that species has not been evaluated for denil fishways, denil fishways should not be used.”" 2021-05-03 15:52:36

223 na ODOT "635 – 412 – 0035, Fish Passage Criteria, Line 478:" 478
"Ascertaining what ODFW considers as allowable parameters for these elements has been problematic. It is suggested that roughened channels, etc have their own section side by side section with or within the stream simulation section."

224 na ODOT "635 – 412 – 0035, Fish Passage Criteria, Line 501" 501
"State that simulation is assumed when a crossing and it's elements:

- Span the 100-year event or;
- Includes a clear span that meets or exceeds 1.5 x Avg ACW
- Includes a clear span that meets or exceeds an entrenchment ratio (ER) up to 2.2. Clear Span = ER x Avg ACW."

31 37 Portland USFWS501 501 "Stream simulation should be identified as the preferred option for fish passage. Given the wide range of fish species and various swimming abilities, stream simulation is the best alternative to provide passage for all fish species. It also best addresses riverine processes and other aquatic organisms, and provides the most ecological benefit short of structure removal." Add the words "preferred alternative" after Stream Simulation Option: (a) Stream Simulation Option (preferred alternative) 2021-05-03 15:53:44

233 na ODOT Climate change and 1.5X ACW Proposal 501
"General question for consideration: Is this proposed change based on biological need and ability of fish to navigate a road stream crossing? Or; is this proposed change in relation to

road stream crossing capacity to convey flood flows, and potential changes in watershed systems resulting from climate change projections?

(Consideration For): The ODOT Fish Passage Program agrees that stream simulation approaches often dictate a crossing width greater than measured ACW for a given project. This is a crucial component for stream morphology and process, allowing for bedload and large woody debris to pass through the road stream crossing structure. From a biological perspective, road stream crossing widths can be required to be greater than 1X ACW (or 1.5x ACW), provided a low flow channel is initially installed and monitored over the project life to ensure volitional fish passage is provided.

(Consideration Opposed): A statewide standard of requiring 1.5X ACW on stream crossing structures may not be appropriate for all crossings in regards to capacity and modeled climate change scenarios. ODOT is currently updating the Hydraulic Design Manual to incorporate best engineering practices for sizing stream crossing structures for capacity, and incorporates projected climate change impacts. It is ODOT's preference for ODFW staff to work closely with ODOT designers, engineers, and geomorphologists during project development to ensure crossing dimensions are appropriate for the individual location based on physical conditions and best available data. Recommend aligning with USFS standards of 1.2X, or with WA standards: 1.2X+2."

225 na ODOT "635 – 412 – 0035, Fish Passage Criteria, Line 504" 504
"State that the ACW shall reflect the average ACW found within the reach as controlled by the adjacent landforms and outside the influence of the crossing or other artificial features such as rip-rap, walls, etc."

32 38 Portland USFWS504-505 504 "Stream simulation at 1.5 times active channel width is preferred over "equal to" active channel width. The larger span will likely ensure upstream passage for a larger number of migratory fish species, especially smaller species like western brook lamprey and Miller Lake lamprey. " Line 504: Suggest replacing "equal to active channel" with "1.5 times active channel" 2021-05-03 15:54:59

33 39 Portland USFWS508-509 508 "Adult Pacific Lamprey migrate throughout the year and experience variable stream flow conditions. At velocities higher than the critical swimming speed (>0.86m/s) Pacific Lamprey use burst-and-attach swimming behavior (PLTW 2017). Given areas to attach and rest, lamprey can successfully navigate velocities <2.5m/s (8.2ft/s) (Keefer et al 2010). Oversized boulders provide attachment locations that allow lamprey to rest, which can be useful at higher flows throughout the year even when navigating relatively short structures. Oregon's other native lamprey are likely

weaker swimmers than Pacific Lamprey, though their swimming abilities have not been explicitly studied. Oversized boulders would therefore be beneficially to the other native lamprey species at various velocities. Current language has over size rocks only in crossing over 40 ft in length. Pacific Lamprey Technical Workgroup. 2017. Practical guidelines for incorporating adult Pacific lamprey passage at fishways. June 2017. White Paper. 47 pp + Appendix. Available online: <https://www.fws.gov/pacificlamprey/mainpage.cfm> Keffer, M.L., W.R. Daigle, C.A. Peery, H.T. Pennington, S.R. Lee,

and M.L. Moser. 2010. Testing Adult Pacific Lamprey Performance

at Structural Challenges in Fishways. North American Journal of

Fisheries Management 30: 376-385." "Suggest changing existing line 509 that to read: "Contains partially-buried, over-sized rock for all road-stream crossing structure." 2021-05-03 15:56:29

34 40 Portland USFWS516-517 516 "Open-bottomed and closed-bottom road-stream crossing structures shall have bed material under or within the structure that are mechanically placed during structure installation rather than allowed to naturally accumulate. If material from outside the stream will be brought in and placed within the culvert, these materials should be cleaned prior to being put into the culvert to eliminate the risk of accidentally introducing organisms (e.g., non-native or invasive) from outside of the stream."

Suggest inserting a new line after line 517 to indicate material brought in from outside the stream will be cleaned prior to placement under or within the road-stream crossing.

2021-05-03 15:57:26

74 80 "Coos Bay, Oregon" Lines 525-532:525 "When considering tide gate/culverts in tidal areas with MTR technology and a water management plan gate time open trumps either velocity or culvert size. If the gate is closed there is no fish passage. At each tide change there is opportunity for fish passage at low or zero velocity with the gate opened. To maximize the effectiveness of the entire system including interior infrastructure that affects pool/reservoir capacity (culverts, tide gates, control structures, channels, ditches, and their cleaning and maintenance) needs to be considered. System capacity is the key to ensuring gate open times can be maximized." Lines 525-532: 2021-05-07 22:10:43

80 na CCFB 635-412-0035 (4)(b) (lines 525 to 529) 525 "This section of the regulation describes requirements for fish passage structures. Section 4(b) applies to tide gates, yet this section also requires tide gates meet the criteria in OAR 635-412-0035 (2) and (3) which pertain to dams and other types of artificial structures. CCFB

recommends that the reference to OAR 635- 412-0035 (2) and (3) be deleted from this section."

Email

108 na Mary-Ann Farm Bureau Passage Criteria 525 We strongly encourage ODFW to revisit the width and height requirements of this section – they are not based in the reality of what we see on the ground and result in arbitrary and expensive replacements that go beyond what’s mandated in the fish passage statutes.

107 na Mary-Ann Farm Bureau Passage Criteria 527 "We recommend that the requirement in 635-412-0035(4)(b) that tide gates should comply with OAR 635-412-0035(2) or (3) be removed. If there are factors in those section that may apply to tide gates, then those factors should be detailed in OAR 635-412-0035(4)(b)"

226 na ODOT "635 – 412 – 0035, Fish Passage Criteria, Line 530" 530
"Please retain this language. If the outgoing tidal exchange is an issue regarding scour and site integrity, there is a reliance on the engineer to design appropriately."

35 41 Portland USFWS560 560 "Adult Pacific lamprey can be collected in traps targeting other larger species. To reduce this potential, traps should be designed such that Pacific Lamprey can pass." "(6) Where relevant, traps targeting other species should be comprised of a material that allows adult Pacific lamprey to pass through with a spacing equal to or greater than 1.0 inches." 2021-05-03 16:00:05

36 42 Portland USFWS587-593 587 "Pacific lamprey (*Entosphenus tridentata*) should be addressed separately from *Lampetra* spp. Adult Pacific lamprey are larger, have a unique ability to climb, are larger, and their passage and swimming abilities have been documented and evaluated to some degree. Critical swimming speed of adult Pacific lamprey (Mesa et al. 2003; Moser and Mesa 2009). Velocities in the range of 2.5 - 3.0 m/sec (8.2 - 9.8 fps) exceeds burst swimming abilities and substantially inhibits (e.g., likely blocks) lamprey passage (LTW 2017). Fishways designed with velocities in less than 2.8 fps will pass Pacific lamprey using critical and free-swimming locomotion. Pacific lamprey more readily move with free-swimming in velocities < 1.2 m/sec (3.9 fps), which exceeds, but is close to sustained swimming abilities. Denil and similar fishways have not been evaluated for Pacific lamprey and are not recommended for use for lamprey. They likely limit passage of other small-bodied native migratory fishes as well. Denil weirs should not be used until such time that passage efficiency trials have occurred for Pacific lampreys. CITATIONS Mesa, M.G., J.M. Bayer,

and J.G. Seelye. 2003. Swimming performance and physiological responses to exhaustive exercise in radio-tagged and untagged Pacific lampreys. Transactions of the American Fisheries Society 132:483–492. Pacific Lamprey Technical Workgroup. 2017. Practical guidelines for incorporating adult Pacific lamprey passage at fishways. June 2017. White Paper. 47 pp + Appendix. Available online: <https://www.fws.gov/pacificlamprey/mainpage.cfm> Moser, M.L., and M.G. Mesa. 2009. Passage considerations for lamprey. Pages 115-124 in: L.R. Brown, S.D. Chase, M.G. Mesa, R.J. Beamish and P.B. Moyle, editors. American Fisheries Society Symposium 72: Biology, Management and Conservation of Lampreys in North America. Bethesda, Maryland. " "Insert a new section at LINE 586 as follows (modified from the Lampetra spp. Section). Suggest the following text: (7) (c) Entosphenus species (Pacific lamprey): (A) Stream simulation techniques are preferred (span = 1.5 active channel width); (B) Fishways and culverts shall not have overhanging surfaces (e.g. entrance floor to fishways and culverts shall be submerged); (C) Fishways shall have smooth rounded 4 to 6 inch radii surfaces over which Entosphenus species may pass to move upstream. This includes but is not limited to the fishway entrance, over or through weirs, slots and orifices, as well as culvert aprons. (E) Orifices are preferred when possible. If orifices (including entrances) are applicable, they shall be positioned flush to the fishway floor, and if possible, flush along one wall. (F) Fishways shall, in all locations have water velocities no greater than *2.8 feet per second and avoid turbulent flow to pass Entosphenus species. Fishway flows at the entrance and throughout the fishway should be non-turbulent and laminar flow. (G) Dams associated with fishways shall have smooth 4- 6 inch rounded surfaces which allow Entosphenus species to pass over. Dams with 90 degree corners or chamfers can limit passage for Entosphenus species. (H) In areas of high velocities (>2.5 feet per second), regular maintenance and repair of floors, walls and rounded surfaces is needed to ensure smooth, continuous attachment surfaces are available for burst and attach locomotion. (I) Passage for lamprey at tide gate entrances and exits is not studied; thus, new tide gates should be avoided. (J) Denil fishways should not be used for passage of lampreys. (K) Picketed leads, picket weirs, auxiliary water supply grating or any other grating shall have a spacing of less than 0.7 inches to preclude lamprey passage where applicable, or greater than 1.0 inch to allow passage through, where applicable. " 2021-05-03 16:02:07

37 43 Portland USFWS588-593 588 "Passage of any Lampetra species has not been well studied; thus stream simulation design that provides a natural type channel provides the greatest potential for passage. Lampetra species are also smaller than Entosphenus spp., and likely have reduced swimming abilities than Entosphenus spp. Lamprey species cannot jump, and primarily swim low in the water column. Thus, overhanging surfaces (such as a perched culverts) or other features that require jumping to pass upstream are passage barriers for these species. To accommodate lamprey species behaviors and abilities, nature-like fishways and stream simulation techniques are the most likely to success in passage of these species (as well as many other smaller migratory fish species and amphibians). If

fishways are constructed, lower orifices flush to the floor are preferred when orifices are present in fishways. " "Insert the modified section below to replace the Lampetra spp. (lines 588-593). Proposed section: (7) (d) Lampetra species (lampreys): (A) Stream simulation techniques are preferred (span = 1.5 active channel width); (B) Fishways shall not have overhanging surfaces (e.g. entrance floor to fishways and culverts shall be submerged); (C) Orifices are preferred when possible. If orifices (including entrances) are applicable, they shall be positioned flush to the fishway floor, and if possible, flush along one wall. The lack of orifices will likely prevent passage of smaller Lampetra species. (D) Denil and similar fishways have not been evaluated for Lampetra species and are not recommended for use for any species. To the extent possible, modern nature-like fishways without high velocities and turbulent flow should be considered for Lampetra species. E) Passage for lamprey at tide gate entrances and exits has not been studied; thus, installation and use of new tide gates should be avoided. " 2021-05-03 16:03:13

227 na ODOT "635 – 412 – 0035, Fish Passage Criteria, Line 623;" 623
Recommended to add "Upstream and or downstream passage may be reduced or precluded for the purposes of maintenance or construction no longer than the IWWW or times specified by the Department determines that the species life history strategy or fitness does not require it."

38 44 Portland USFWS633-635 633 "In addition to fish salvage that is completed prior to construction activity, freshwater mussels and crayfish should be salvaged too. Mussel relocation guidance: Blevins, E., L. McMullen, S. Jepsen, M. Blackburn, A. Code, and S.H. Black. 2017. Conserving the Gems of Our Waters: Best Management Practices for Protecting Native Western Freshwater Mussels During Aquatic and Riparian Restoration, Construction, and Land Management Projects and Activities. 108 pp. Portland, OR: Xerces Society for Invertebrate Conservation. Available at <https://xerces.org/publications/guidelines/conserving-gems-of-our-waters> " "Suggest changing existing line 633 to read "Prior to in-stream construction activities, all fish, native freshwater mussels, and crayfish shall be safely collected..." " 2021-05-03 16:05:46

39 45 Portland USFWS633-635 633 "Special efforts to salvage larval lamprey, which reside in the sediment year-round, should also be made. Larval lamprey often are not collected by standard e-fishing techniques and often emerge from the sediment hours to days after dewatering activities. Larval lamprey spp. Dewatering/salvage/e-fishing guidelines and information is available in in Best Management Guidelines for Native Lampreys During In-water Work (Lamprey Technical Workgroup 2020: <https://www.fws.gov/pacificlamprey/Documents/2020%20Lamprey%20BMG%20Final.pdf>) "

"Suggest adding to text in 633-635: In suitable habitats, larval lamprey be will salvaged and rescued, using larval lamprey specific techniques. " 2021-05-03 16:06:53

40 46 Portland USFWS633-635 633 "Fish salvage will be completed by authorized personnel with a collection permit issued by the Department. A federal recovery permit is required to intentionally collect listed aquatic species. Even if there is a slim chance they could be encountered, possession of a federal recovery permit would authorize collection of listed species for rescue/salvage." "Suggest adding text to change existing lines 634-635 to "...permit issued by the Department, USFWS and NMFS, as appropriate." " 2021-05-03 16:07:53

41 47 Portland USFWS633-635 634 Text states salvaged fish should be placed in the flowing stream but does not indicate where fish should be released relative to ongoing project impacts. Recommend fish are released outside of project area impacts to reduce or eliminate exposure to turbidity (suspended sediments) or other impacts due to construction. Suggest adding text to change existing line 634 to "...placed in the flowing stream outside of the area of project impacts. ..." 2021-05-03 16:08:56

56 62 Coquille/ Coos Bay "Coquille Watershed Association (Melaney Dunne), Coos Watershed Association (Ed Hughes) " 638-670: Experimental fish passage 638
"Current requirements for Experimental Fish passage structure are onerous and do not incentivize innovation and improvements. Particularly the 5 year study period is prohibitive to fund for an NGO, business or landowner. It can be difficult to identify funding to support experimentation yet key innovations are needed to continue to promote fish passage goals and the productivity of working lands / urban areas. A clear example of innovations needed are in tide gate technology to meet growing demand and the diversity of conditions observed in tidal areas. " 638-670: Experimental fish passage Reducing the 5 year monitoring period would make it more feasible to implement experimental structures. If the ODFW fish passage compensation fund could be used to support innovations in the field that would be ideal to incentivize design upgrades and/or new designs. 2021-05-07 07:45:31

81 na CCFB 635-412-0035 (11)(c) (lined 638 to 670) 638 This section describes how alternative fish passage tide gates can get approved. It is unnecessarily complex. We recommend that this section be streamlined so that more affordable fish passage compliant tide gates can get approved. CCFB recommends that fish passage compliant tide gates of neighboring states be approved for Oregon. Email

228 na ODOT "635 – 412 – 0035, Fish Passage Criteria, Line 640" 640
"It is recommended to allow the flexibility to use the field with prescribed monitoring. This is important to represent real world passage conditions, durability, and maintenance requirements."

42 48 Portland PacifiCorp 635-412- 654 "PacifiCorp owns over 3,000 megawatts of renewable energy generating facilities, including several hydroelectric projects on waters of the state of Oregon inhabited by native migratory fish. The company is also expanding its renewable generation portfolio to address climate change impacts and ultimately achieve net zero greenhouse gas emissions in service of over 2 million customers across six western states. Therefore, PacifiCorp hereby expresses its support and interest in Oregon Department of Fish and Wildlife (ODFW)'s current review and revision of the fish passage administrative rules (Oregon Administrative Rules (OAR) 635-412-) as motivated, in part, by ODFW's new Climate and Ocean Change Policy (OAR 635-900-). Addressing climate change will require prudent, near-term actions to support ODFW's mission to protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations. PacifiCorp supports science-based decision-making regarding fish passage in Oregon for the purposes of achieving recovering and sustainable populations of native migratory fish. PacifiCorp also notes that hydropower has a significant role to play in moving towards carbon-neutral operations in Oregon and ameliorating the causes and effects of climate change. Therefore, the climate change benefits of hydroelectricity should be considered in net benefit analyses of fish passage at hydropower facilities. PacifiCorp has gained experience implementing fish passage solutions at our federally-licensed hydroelectric projects, and we have learned that site-specific information on current and, to the extent possible, future conditions must be considered in implementation of the administrative rules to maximize long-term net benefits to native migratory fish. In certain cases, biological research has concluded that there may be little value to local fish populations in light of the expense of constructing, operating, and maintaining fish passage at an artificial obstruction. Off-site mitigation projects with lower costs than implementing fish passage at an artificial obstruction can provide a greater net benefit to at-risk fish populations, including some that may not be present at the site. The revised administrative rules should clarify that it is the intent of the state to achieve the highest net benefit to fish populations when considering the impacts of an artificial obstruction and any proposed mitigation measures. " "Fish Passage Criteria (-0035 (11)(b)); Lines 654-659 The statement "If at any time an experimental fish passage structure is deemed by the Department in writing to not provide fish passage..." seems very subjective. Statement would benefit from identification of reasonable standards that can be referenced and measured. At the end of (11)(b) need to remove "but no later than the end of the next complete in-water work period after notification by the Department." In most cases this is not feasible or reasonable, and the earlier text "shall be installed as soon as practicable" drives the timing of construction. "

2021-05-04 14:06:40

161 na PacifiCorp Fish Passage Criteria (-0035 (11)(b)); Lines 654-659 654
"The statement "If at any time an experimental fish passage structure is deemed by the Department in writing to not provide fish passage..." seems very subjective. Statement would benefit from identification of reasonable standards that can be referenced and measured.

At the end of (11)(b) need to remove "but no later than the end of the next complete in-water work period after notification by the Department." In most cases this is not feasible or reasonable, and the earlier text "shall be installed as soon as practicable" drives the timing of construction."

70 76 Portland Fish Passage Criteria (-0035 (11)(b)); Lines 658-663 658
"The statement "If at any time an experimental fish passage structure is deemed by the Department in writing to not provide fish passage..." seems very subjective. Statement would benefit from identification of reasonable standards that can be referenced and measured. Recognizing that these standards may be unknown apriori, they should be identified on a case-by-case basis when installation is authorized. Perhaps referencing ""safe, timely, effective"" would be a placeholder with specific measurable objectives to be specified? Additionally, the requirement to modify or install a new facility ""in any case no later than the end of the complete in-water work period"" is arbitrary and unrealistic - we all know how long these designs can take if there is any complexity -- and the fact that we are resorting to experimental designs probably is a good indicator of complexity. Suggest requiring a plan and schedule for installation/modifications that ODFW would approve. " "Fish Passage Criteria (-0035 (11)(b)); Lines 658-663 If at any time an experimental fish passage structure is determined by the department to not meet the measurable criteria for fish passage set forth in the approval process for authorizing installation of the structure the owner or operator, in consultation with the Department, shall make such modifications to the structure or operation as are necessary to provide fish passage, and, after a reasonable period, if modifications are deemed by the Department in writing to meet the measurable criteria for fish passage, a plan and schedule for providing such passage shall be submitted to the department for approval"" 2021-05-07 09:15:13

109 na Mary-Ann Farm Bureau Passage Criteria 661 "The requirements for an "experimental fish passage structure" to move from an experimental status to a no longer experimental structure are unreasonable, particularly for tidegates. ODFW must provide for an approve alternative methods of compliance. Specifically, we recommend that the criteria for evaluation and approval of experimental tide gates be considerably reduced. This will allow for approval of more affordable options to small ranchers and farmers. We also recommend that ODFW make a real effort to develop and approve inexpensive tide gate options that a farmer or rancher can install themselves."

212 na ODOT "635-412-0035, Fish Passage Criteria" - "It would be helpful to have some language that allows for applicants to provide evidence of meeting fish passage by demonstrating:

- Hydraulics within the crossing emulate or are similar to those found within the stream reach.
- Velocities
- Channel roughness
- Depth
- Fish passage conditions overlap with the life-history needs native migratory fish. E.g. spawning migration, outmigration, thermally induced migration, foraging.
- This has been a method of obtaining fish passage approval, but is not clear in OARs for what is required, process, etc."

213 na ODOT "635-412-0035, Fish Passage Criteria" - "General pertaining to fish passage AO's on manmade lakes, backwatered from dams, ect:"

"Guidance needs to be developed specific to situations where dams and or manmade lakes have drainage facilities and/or backwater influences at the artificial obstruction. Often, the extent of passage / backwater potential is outside of the control of the owner / operator of AO. "When water elevations at the downstream extent of the AO facilitate passage of NMF, structures shall maintain passage conditions pursuant to XX, ect" or similar."

214 na ODOT "635-412-0035, Fish Passage Criteria" - General pertaining to voluntary retrofits; "It would be beneficial to clarify language around voluntary retrofits in the OARs. These could still go through engineering / ODFW review prior to construction. Clarification needed that a voluntary retrofit targeting fish passage improvements would not constitute a ""trigger"" dictating a complete replacement of AO."

215 na ODOT "635-412-0035, Fish Passage Criteria" - General pertaining to Beavers "Guidance should be developed and incorporated into OARs to explain when a beaver deceiver, trash rack, pond leveling device, or other feature is considered an AO, or a Fish Passage Trigger.

If a beaver dam creates an AO, and a pond leveling device is installed in the location, is the pond leveling device considered a fish passage trigger? Or, does the pond leveling device trigger the beaver dam as the AO?"

216 na ODOT "635-412-0035, Fish Passage Criteria" -

General pertaining to restoration of floodplain and wetland habitats; Recommend developing guidance on when and how Fish Passage Triggers are handled in situations where artificial channels are filled for restoration purposes (i.e Stage 0).

251 na Portland Ted Labee Design Criteria Section -

"Please include an explicit design requirement that bridges pass the 100-year flood flows and account for expected lateral migration of stream channels to minimize the need for bank armoring. I believe that previous commenters suggested that ODFW use the 50-year flood as a suitable design criteria. I believe that the 50-year flood is insufficient and inconsistent with the precautionary principle that ODFW must follow under the new 635-900 rule. Please use the 100-year flood. For culvert design: Please retain and make more explicit the stream simulation design requirements

similar to what Washington State does in WAC 220-660-190. For culverts and other road-stream crossings, the fish passage criteria should specify that passage structures should have a similar slope and

a similar cross section to the natural channel conditions in the reach. In certain circumstances, ODFW biologists may be called upon to consult on fish passage on a stream

where there is insufficient fish distribution data. In these instances, especially, it would be good to have default criteria for water depth, velocity, and other hydraulic considerations. In Washington State in these circumstances, biologists require that culverts be designed to be passable to a 6-inch native trout. Oregon could do something similar here, instead of placing the burden on an ODFW biologists to declare what species and life-stage is appropriate when it may be unclear or unknown."
5/18/2021