

# Modification of Section 401 Water Quality Certification for the Carmen-Smith Hydroelectric Project

Submitted to: Eugene Water and Electric Board  
FERC Project No. 2242

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# 1. Scope of Review

In November 2016, the Eugene Water and Electric Board filed with the Federal Energy Regulatory Commission a revised offer of settlement including a revised and restated Settlement Agreement for the relicensing of its Carmen-Smith Hydroelectric Project (FERC No. 2242). The 2016 Settlement Agreement (“2016 Settlement Agreement”) replaces and supersedes the 2008 Settlement Agreement in its entirety. The revised agreement retains EWEB’s commitment to provide upstream and downstream fish passage at Trail Bridge Dam but significantly modifies the methodology to achieve these objectives. Specifically, the revised agreement proposes to construct and operate a manual trap and haul system in place of the previously proposed volitional fish ladder. The 2016 Settlement Agreement also proposes to modify the existing spillway, hoist and gate system to provide downstream passage rather than build a screen and bypass pipe system. Last, to facilitate downstream passage and reduce harm to migrating fish, EWEB proposes to cease hydropower operation at the Trail Bridge powerhouse under normal operating conditions.

In January 2011, the Oregon Department of Environmental Quality issued EWEB a section 401 water quality certification based in part on the scope of actions proposed in the 2008 Settlement Agreement. Because the proposed changes were not considered in the 2011 certification, EWEB requested DEQ consider these changes and modify, as warranted, the Carmen-Smith hydroelectric project’s section 401 water quality certification.

DEQ has completed its evaluation of changes to the proposed project activity and has modified the section 401 water quality certification in accordance with state law. This document presents our evaluation of the proposed changes and the conditions necessary to provide DEQ with reasonable assurance that actions under a new FERC license will not violate state water quality standards.

## 1.1 Project History

In November 2006, EWEB filed a license application with FERC to relicense operation of the Carmen-Smith Hydroelectric Project, FERC No. 2242. In October 2008, EWEB on behalf of itself and 16 other parties filed with FERC an Offer of Settlement, which included a Settlement Agreement intended to balance the interests of the Settlement Parties, the affected resources and the operation of the Project. The Settlement Agreement includes measures intended to supplement the actions proposed in the final license application.

In January 2011 DEQ issued EWEB a conditional water quality certification pursuant to section 401 of the federal Clean Water Act and ORS 468B.040. Based on its review, DEQ believed the project would comply with water quality standards provided the new license incorporates the conditions of the section 401 water quality certification and adopts the terms of the Settlement Agreement.

In July 2015, EWEB requested FERC delay issuance of the new license to allow EWEB to update an economic analysis of the project. In January 2016, EWEB requested FERC continue to hold license issuance in abeyance to allow EWEB and the settlement parties to amend the 2008 Settlement Agreement. On Nov. 30, 2016, EWEB on behalf of itself and 12 other settlement parties filed with FERC an Amended and Restated Offer of Settlement, which includes an Amended and Restated Settlement Agreement. The 2016 Settlement Agreement replaces and supersedes the 2008 Settlement Agreement. In February 2017, EWEB requested DEQ review the revised actions and, if necessary, modify the 2011 water quality certification to address these modifications. On Feb. 21, 2017, DEQ notified EWEB that it would reevaluate the proposed action and modify the certificate accordingly to ensure compliance with water quality standards. On February 8, 2018, EWEB refiled with DEQ its request to review and, if necessary, modify the 2011 water quality certification to provide DEQ with additional time to consider the request and input from the public.

## 1.2 DEQ Authorities

DEQ may modify a 401 certification in accordance with the conditions described in Oregon Administrative Rules 340-048-0050. Specifically, section 340-048-0050(1)(d) allows DEQ to modify or revoke a certificate if “changes in conditions regarding the activity or affected waterways since the certification was issued affect or might affect compliance with water quality standards and requirements.”

In its Feb. 21, 2017 correspondence EWEB indicated the actions and fish passage facilities required by the 2016 Settlement Agreement differ significantly from those in the 2008 agreement. Based on these revisions, EWEB requested DEQ review the revised operational changes and, if necessary, modify the 2011 water quality certification to reflect those changes. On February 8, 2018, EWEB withdrew and simultaneously refiled this request to allow DEQ additional time to consider the effect of operational changes on water quality.

The changes proposed in the 2016 Settlement Agreement will directly affect project operations under a new license. Because these proposed changes may affect implementation of the Jan. 3, 2011 water quality certification DEQ will reevaluate the effects of the proposed action on water quality and modify the certification in accordance with Oregon Administrative Rules 340-048-0050(1)(d).

## 2. Proposed Activity

On Nov. 30, 2016, EWEB filed the 2016 Settlement Agreement with FERC. The 2016 Settlement Agreement describes the project, resource protection measures, and responsibilities of EWEB under a new license. The revised 2016 Settlement Agreement retains many of the measures prescribed in the earlier agreement but includes significant changes to certain activities including upstream and downstream fish passage methods at Trial Bridge Dam. The 2016 Settlement Agreement contains nine Exhibits and one Appendix, which substantively reflect the actions that EWEB agrees to perform under a new license. A summary of the elements, which were revised in the 2016 Settlement Agreement and their relevance to DEQ’s section 401 certification is presented in Table 1.

Table 1. Changes to the 2016 Settlement Agreement

| Element    | Description   | Change(s) in 2016 Settlement Agreement     | Reference in 401 | Consideration in Revised 401 |
|------------|---|--|------------------|------------------------------|
| Exhibit A  | Proposed License Articles                             | See Table 2                                | Yes              | Yes                          |
| Exhibit B  | Aquatics Management Plan                              | See Table 3                                | Yes              | Yes                          |
| Exhibit C  | Recreation and Aesthetics Management Plan             | Removes funding for regulatory enforcement | None             | No                           |
| Exhibit D  | Wildlife Management Plan                              | No change                                  | None             | No                           |
| Exhibit E  | Vegetation Management Plan                            | No change                                  | 3(d), 3(g)       | No                           |
| Exhibit F. | Historic Properties Management Plan                   | No change                                  | None             | No                           |
| Exhibit G  | Roads, Waste Areas, and Staging Areas Management Plan | No change                                  | None             | No                           |
| Exhibit H  | Policy Committee Representatives for the Parties      | No change                                  | None             | No                           |
| Exhibit I  | Designated Representatives of the Parties for Notice  | No change                                  | None             | No                           |
| Appendix A | Additional Measures                                   |  | None             | No                           |

Changes to the proposed action, which include references in DEQ’s water quality certification, include the Proposed License Articles contained in Exhibit A. The Aquatics Management Plan contained in Exhibit B is addressed in the following sections.

## 2.1 Exhibit A: Proposed License Articles

The 2008 and 2016 Settlement Agreements contain proposed license articles which require EWEB to take certain actions upon issuance of a new FERC license. Table 2 identifies the Proposed License Articles in the 2008 and 2016 agreements and notes changes to the license articles under the current agreement. DEQ will modify the 2011 certification to ensure references to the proposed license articles remain consistent with the intent of the 2016 Settlement Agreement.

**Table 2 Exhibit A: Summary of Proposed License Articles**

| Proposed License Articles |      | Description   | Changes from 2008 Settlement Agreement  |
|---------------------------|------|---|---|
| 2008                      | 2016 |   |   |
| 1                         | 1    | Consultation and Approval Process   | none  |
| 2                         | 2    | Management Plan Work Groups   | none  |
| 3                         | 3    | Instream Flows  | none  |
| 4                         | 4    | Habitat PME — Upper Carmen Bypass Reach and Carmen Diversion Dam Fish Passage | none  |
| 5                         | --   | Habitat PME – Lower Carmen Bypass Reach                                       | Implemented Outside of the New License Pursuant to USDA Forest Service Approval |
| 6                         | 5    | Habitat PME - Carmen Diversion Reservoir                                      | Reordered   |
| 7                         | 6    | Habitat PME - Smith Reservoir   | Reordered   |
| 8                         | 7    | Habitat PME - Smith Bypass Reach  | Reordered   |
| 9                         | 8    | Habitat PME - Trail Bridge Reservoir  | Reordered   |
| 10                        | 9    | Habitat PME - Carmen-Smith Spawning Channel                                   | Reordered   |
| 11                        | 10   | Trail Bridge Reservoir Fluctuations   | Reordered   |
| 12                        | 11   | Trail Bridge Reservoir Stranding Management                                   | Reordered   |
| 13                        | 12   | Ramping-McKenzie River  | Reordered   |
| 14                        | 13   | Large Woody Debris Management   | Reordered   |
| 25                        | 14   | Water Quality Management  | Reordered   |
| 15                        | 15   | Reporting Requirements  | none  |
| 16                        | 16   | Construction Management Plan  | none  |
| 17                        | 17   | Vegetation Management Plan  | none  |
| 18                        | 18   | Wildlife Management Plan  | none  |
| 19                        | 19   | Historic Properties Management Plan   | none  |
| 20                        | 20   | Recreation and Aesthetics Management Plan                                     | Removes funding for regulatory enforcement                                      |
| 21                        | 21   | Roads, Waste Areas, and Staging Areas Management Plan                         | none  |
| 22                        | 22   | Transmission Line Management Plan   | none  |
| 23                        | 23   | Fire Response and Suppression Coordination Plan                               | none  |
| 24                        | 24   | Implementation on NFS Lands   | none  |
| 26                        | 25   | Inspection of Project   | Reordered   |
| 27                        | 26   | Emergency or Special Conditions   | Reordered   |
| 28                        | 27   | Reservation of Authority: Fishways  | Reordered   |
| 29                        | 28   | Fish Passage  | Reordered   |
| --                        | 29   | Trap and Haul Fish Passage at Trail Bridge Dam                                | Requires trap and haul upstream fish passage                                    |
| 30                        | --   | Volitional Fish Ladder at Trail Bridge Dam                                    | Omitted   |
| 35                        | 30   | Upstream Fish Passage at the Carmen-Smith Spawning Channel                    | Reordered   |
| 31                        | --   | Upstream Fish Passage Barrier at Trail Bridge Tailrace                        | Omitted   |
| --                        | 31   | Upstream Passage at Sweetwater Creek  | Reordered   |
| 33                        | 32   | Fish Protection at Carmen Power Plant   | Reordered   |
| --                        | 33   | Downstream Passage at Trail Bridge Dam  | Modified spillway to facilitate downstream passage                              |
| 32                        | --   | Fish Screen and Fish Bypass System at Trail Bridge Dam                        | Omitted   |
| 34                        | --   | Biological Monitoring and Adaptive Management                                 | Omitted   |
| 36                        | 34   | Reservation of Authority  | Reordered   |

## 2.2 Exhibit B: Aquatics Management Plan

Revisions to the Aquatics Management Plan are in Table 3.

**Table 3. Exhibit B: Aquatics Management Plan**

| Settlement Agreement Reference                            | Proposed License Articles | Description | Change from 2008 | 2011 DEQ   | Reevaluated  |           |     |
|---|---------------------------|-------------|------------------|--|--|-----------|-----|
| <b>Section 4.1 - Fish Passage</b>                         |                           |             |                  |  |  |           |     |
| B-4.1.2   | B-4.1.2                   | 28, 29      | 29, 30           | Upstream passage facilities at Trail Bridge Dam          | Trap and Haul replaces Volitional Fish Passage Ladder  | 2(d)(1)   | Yes |
| B-4.1.3   | B-4.1.3                   | 28, 33      | 29, 32           | Downstream passage facilities at Trail Bridge Dam        | Passage via modified spillway; partial Trail Bridge Powerhouse shutdown. Replaces screen and downstream bypass system. | 2(d)(1)   | Yes |
| B-4.1.4   | B-4.1.5                   | 28, 31      | 29               | Upstream passage at Sweetwater Creek                     | none   | 2(d)(3)   | No  |
| B-4.1.5   | B-4.1.8                   | 28, 30      | 29, 35           | Upstream passage at the Carmen-Smith Spawning Channel    | none   | 2(d)(6)   | No  |
| B-4.1.6   | B-4.1.10                  | 28          | 29               | Upstream Passage Evaluation Program                      | UPEP replaces biological monitoring and adaptive management  | n/a       | No  |
| B-4.1.7   | B-4.1.10                  | 28          | 29               | Downstream Passage Evaluation Plan                       | DPEP replaces biological monitoring and adaptive management  | n/a       | No  |
| <b>Section 4.2 – Flow Releases and Instream Flows</b>     |                           |             |                  |  |  |           |     |
| B-4.2.1, 4.2.2  | B-4.2.1                   | 3           | 3                | Flows: Upper/Lower Carmen Bypass Reach                   | none   | 2(a)(1,2) | No  |
| B-4.2.3   | B-4.2.3                   | 3           | 3                | Flows: Smith Bypass Reach                                | none   | 2(a)(3)   | No  |
| B-4.2.4   | B-4.2.4                   | 3           | 3                | Flows: Spill reduction and ramping in Smith Bypass Reach | Carmen bypass valve reduced from 1,000 cfs to 800 cfs.   | n/a       |     |
| <b>Section 4.3 – Habitat, Mitigation, and Enhancement</b> |                           |             |                  |  |  |           |     |
| B-4.3.1   | B-4.3.1                   | 4           | 4                | Habitat PME: Upper Carmen Bypass Reach                   | none   | 2(e)      | No  |
| B-4.3.2   | B-4.2.1                   | none        | 5                | Habitat PME: Lower Carmen Bypass Reach                   | none   | 2(e)      | No  |
| B-4.3.3   | B-4.3.3                   | 5           | 6                | Habitat PME: Carmen Diversion Reservoir                  | None   | 2(e)      | No  |
| B-4.3.4   | B-4.3.4                   | 6           | 7                | Habitat PME: Smith Reservoir                             | none   | 2(e)      | No  |
| B-4.3.5   | B-4.3.5                   | 7           | 8                | Habitat PME: Smith Bypass Reach                          | No change except no obligation to perform additional enhancement in LCB Reach if objectives are not achieved.          | 2(e)      | No  |
| B-4.3.6   | B-4.3.6                   | 8           | 9                | Habitat PME: Trail Bridge Reservoir                      | none   | 2(e)      | No  |
| B-4.3.7   | B-4.3.7                   | 9           | 10               | Habitat PME: Spawning Channel                            | none   | 2(e)      | No  |
| <b>Section 4.4 – Flow Fluctuations</b>                    |                           |             |                  |  |  |           |     |
| B-4.4.1   | B-4.4.1                   | 10          | 11               | Fluctuations in Trail Bridge Reservoir                   | none   | 2(c)(1)   | No  |
| B-4.4.2   | B-4.4.2                   | 11          | 12               | Trail Bridge Reservoir fish stranding management         | none   |           | No  |
| B-4.4.3   | B-4.4.3                   | 12          | 13               | Flow Fluctuations downstream of Trail Bridge Dam         | none   | 2(c)(2)   | No  |
| <b>Section 4.5 – Large Woody Debris Management</b>        |                           |             |                  |  |  |           |     |
| B-4.5   | B-4.5                     | 13          | 14               | Large Woody Debris Management                            | none   |           | No  |



## 2.2.1 Upstream Fish Passage at Trail Bridge Dam

Under a new license, EWEB must design, construct, operate, and maintain a trap and haul facility at Trail Bridge Dam consistent with EWEB's Technical Memorandum dated June 28, 2016 and any subsequent revisions, according to the 2011 National Marine Fisheries Service criteria document entitled *Anadromous Salmonid Passage Facility Design*. EWEB must design the trap and haul facility in consultation with the Fish Working Group<sup>1</sup> and subject to approval by the Fish Agencies<sup>2</sup> and USDA Forest Service.

The trap and haul facility replaces the volitional fish ladder described in the 2008 Settlement Agreement but retains the overall objective of supporting safe, timely, and effective upstream passage of fish and achieving upstream fish passage standards described in the Aquatics Management Plan Section 4.1.1.1. Within six months of receiving a license, EWEB must, prepare and file with FERC a design and schedule for construction of the Trail Bridge Dam trap and haul facilities. EWEB is required to consult with the Fish Working Group and receive approval from the Fish Agencies and USDA Forest Service on the design and schedule. Subject to FERC approval, EWEB must construct the trap and haul facility within three years of receiving its license or the conclusion of an appeal.

The trap and haul facility will be on the right (north) embankment immediately adjacent to the existing Trail Bridge powerhouse. A conceptual design of the proposed trap and haul facility is in Figure 1. Final placement and design elements will be determined following a complete bathymetric survey of the channel. Operation of the facility will rely on attraction flows ranging from 118 to 154 cfs. Under the 2016 Settlement Agreement EWEB may, in consultation with the Fish Working Group, install a microturbine to reduce the pressure of water entering the trap and haul facility. EWEB expects to operate the facility during spawning and migratory periods with schedule adjustments based on video reconnaissance data.

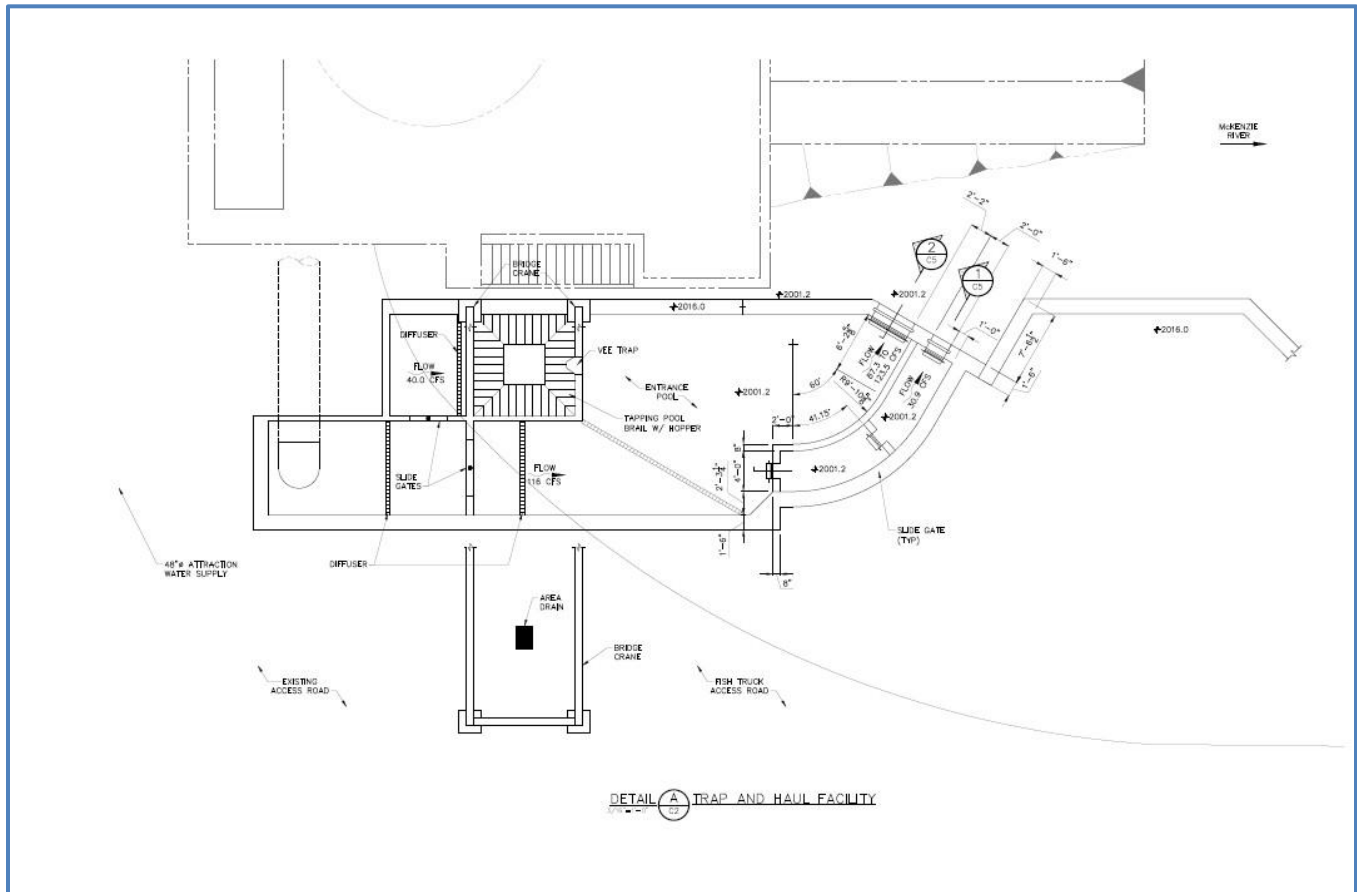
Operation of the trap and haul facility will not alter the magnitude or timing of scheduled flows below Trail Bridge Dam. The proposed action eliminates the previously proposed fish ladder entrance located about 400 feet downstream of the dam. Ladder discharge was estimated to be about 60 to 125 cfs, or about 5-10 percent of total streamflow. Under the proposed action, all releases to the McKenzie River will originate in close proximity to the base of the dam.

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<sup>1</sup> The Fisheries Work Group will consist of representatives from National Marine Fisheries Service, U.S. Fish and Wildlife Service, USDA Forest Service, Oregon Department of Fish and Wildlife, DEQ, interested Indian Tribes, and other interested Parties.

<sup>2</sup> NMFS, USFWS, ODFW.

Figure 1: Trap and Haul Facility – Conceptual Design



## 2.2.2 Downstream Fish Passage at Trail Bridge Dam

Under a new license, EWEB shall design, construct, operate, and maintain the Trail Bridge Dam spillway, gate and hoist system, and attraction water system for the purpose of supporting year-round safe, timely, and effective downstream passage of fish. EWEB shall design the spillway, gate and hoist system, and attraction water system in consultation with the Fish Working Group and subject to approval by the Fish Agencies and USDA Forest Service.

The modified spillway system replaces the Trail Bridge screen and downstream bypass system described in the 2008 Settlement Agreement. Under the current proposal, EWEB will install a hoist mechanism to control spillway discharge and undertake spillway modifications to improve hydraulics and fish safety. The proposed action eliminates the 3,732-foot-long, round, closed-conduit pipe system designed to carry the 30 cfs bypass flow downstream to where the bypass flow is introduced back into the McKenzie River. Under the current proposal, all discharge from Trail Bridge Dam will enter the McKenzie River immediately below the dam.

The proposed design shall include the minimum design elements:

- a. 12-inch minimum gate opening to accommodate adult bull trout and adult Chinook passage
- b. Modified the “flip bucket” to promote laminar flow and reduce turbulence
- c. Modifications to reduce need to salvage adult fish from the flip bucket
- d. Hoist mechanism to allow fine control of gate openings and spillway flows to meet ramping criteria
- e. Modified tailrace configuration to provide safer discharge for fish upon exit from the spillway

### **2.2.3 Trail Bridge Dam Turbine Operation**

Upon completion of the upstream and downstream fish passage facilities, EWEB shall stop operating the Trail Bridge turbine and power plant for the purposes of power generation to meet downstream passage standards, avoid entrainment, and to facilitate downstream passage. EWEB may operate the Trail Bridge power plant until completion of upstream and downstream passage facilities at Trail Bridge Dam described in the Aquatics Management Plan Sections 4.1.2 and 4.1.3.

During the term of the new license, EWEB shall maintain the Trail Bridge power plant in safe working order for the following purposes:

- Maintain an operational low-level outlet from Trail Bridge Reservoir
- Provide redundancy to the spillway, gate and hoist mechanism in case of mechanical failure
- Provide additional discharge capacity in the event of a probable maximum flood event

EWEB shall periodically test the Trail Bridge turbine as outlined in the Aquatics Management Plan Table 4-3.

## **2.3 Other Regulatory Requirements**

In January 2011, DEQ issued EWEB a section 401 certification for the Carmen-Smith hydroelectric project. DEQ found there was reasonable assurance that operation of the project under a new license would meet water quality standards and other requirements of state law. In one affected segment -- the Smith bypass reach -- DEQ's 2011 analysis relied on the natural conditions criterion of the temperature standard given in Oregon Administrative Rule 340-041-0028(8). This rule allowed natural thermal potential of the stream to supersede the biologically based criteria where site-specific characteristics prevent attainment of the numeric criterion.

On Feb. 28, 2012, the U.S. District Court for the District of Oregon invalidated the U.S. Environmental Protection Agency's approval of DEQ's natural conditions criterion for water temperature. Because of the court's decision, in August 2013, EPA disapproved Oregon's natural conditions criterion in Oregon Administrative Rule 340-041-0028(8), leaving the remainder of the temperature standard effective. Although the 2016 Settlement Agreement proposes no change in activity for this reach, DEQ cannot issue a new or modified section 401 water quality certification that relies on the natural conditions criteria. For this reason, DEQ must reanalyze the effect of the proposed action within the context of existing rules and modify the 401 certification accordingly.

## **2.4 Summary of Actions Under Review**

DEQ will consider the effect that changes to the following actions may have on water quality. If DEQ is reasonably assured the changes to the proposed activity will comply with water quality standards DEQ may modify, as necessary, the section 401 water quality certification as allowed by Oregon Administrative Rule 340-048-0050(1)(d).

### Project Modifications Proposed in the 2016 Revised Settlement Agreement

- Upstream Fish Passage at Trail Bridge Dam
- Downstream Fish Passage at Trail Bridge Dam
- Trail Bridge Turbine Operation

### Proposed License Articles

- Reorder numbering of Proposed License Articles

### Smith Bypass Reach

- Evaluate effects of proposed action on temperature

# 3. Water Quality Standards

Water quality standards are comprised of three elements. These include the beneficial uses, the water quality criteria intended to protect those uses, and the antidegradation policy, which protects existing water quality from degradation. To support all beneficial uses, DEQ applies numeric criteria to specific waterbodies and reaches within those waterbodies. This section identifies beneficial uses designated for waters of the McKenzie River and the numeric criteria necessary to support those uses.

## 3.1 Beneficial Uses

Beneficial uses to be protected have been identified generally for each river basin in Oregon and specifically for significant stream reaches within some basins. The state's designated beneficial uses to be protected in the Willamette Basin, where the proposed project would be located, are listed in Oregon Administrative Rules 340-041-0340, Table 340A, and Figures 340A and 340B. These uses include public and private domestic and industrial water supply, irrigation, livestock watering, fish and aquatic life, wildlife and hunting, fishing, boating, water contact recreation, aesthetic quality and hydropower.

Designated beneficial uses in the project area are unchanged from DEQ's 2011 analysis.

## 3.2 Biologically Based Numeric Criteria

Biologically based numeric criteria provide support the growth and development of aquatic species during all life stages. The distribution of designated fish use throughout the Willamette Basin is identified in the Fish Use Designation maps in Oregon Administrative Rules 340-041-0340, Figure 340A and Figure 2 of this document. These maps define biologically based numeric criteria for temperature and dissolved oxygen to support beneficial uses within defined geographical ranges of each subbasin.

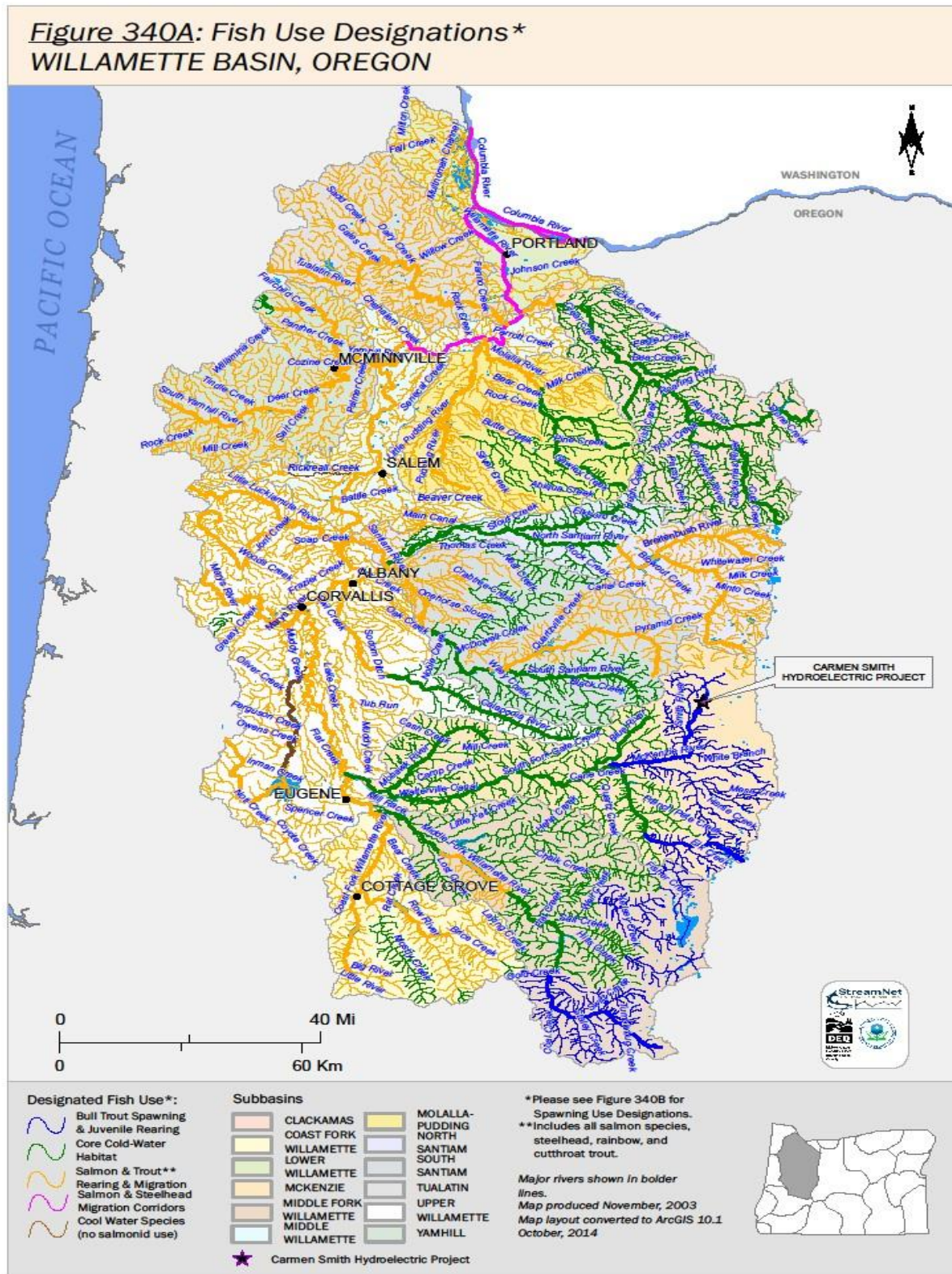
All biologically based numeric criteria for project waterbodies other than the Smith bypass reach remain unchanged from our 2011 analysis. Use of DEQ's natural conditions criterion for water temperature was invalidated in February 2012. The absence of the natural conditions criteria requires new or modified sources to meet the more stringent of the total maximum daily load allocation or the biologically based numeric criteria with the human use allowance of 0.3° C. DEQ did not apply the natural conditions criteria to any waterbody other than the Smith bypass reach.

## 3.3 Antidegradation Policy

The antidegradation policy (OAR 340-041-0004) applies to all surface waters. The goal of the antidegradation policy is to prevent unnecessary further degradation of water quality and to protect, maintain, and enhance the quality of existing surface waters to ensure the full protection of all existing beneficial resources. For waters that meet applicable water quality standards, the policy states that the existing water quality standard shall be maintained and protected unless the Oregon Environmental Quality Commission finds otherwise. For water bodies that do not meet certain criteria, the policy prohibits further degradation.

Oregon's antidegradation policy remains unchanged from DEQ's 2011 analysis.

Figure 2: Fish Use Designations in the Willamette Basin



# 4.0 Water Quality Compliance Evaluation

This section considers the effect that the actions described in Section 2 may have on water quality. DEQ's evaluation includes changes to the proposed activity that were not considered in its 2011 section 401 evaluation. The principal modifications address changes in methodology to achieve fish passage above and below Trail Bridge Dam. In addition, EWEB will cease operation of the Trail Bridge turbine except for limited periods for emergency operation and to confirm operation. This proposal will eliminate the requirement to construct and operate a screen at the turbine intake. DEQ's evaluation will also reevaluate the thermal response to project releases in the Smith bypass reach based on recent changes to how Oregon's temperature standard is implemented. Table 4 identifies water quality standards that may be affected by changes to the proposed activity. Water quality standards that may be affected by the activity are evaluated in the following sections.

Table 4. Water Quality Standards

| Rule             | Criterion                                     | Standard  | Assessment  | Further Evaluation |
|------------------|---|---|---|--------------------|
| 340-041-0004     | Antidegradation                               | Prevents unnecessary further degradation from new or increased point and nonpoint sources of pollution.   | New or increased sources may affect water quality.  | Yes                |
| 340-041-0007(9)  | Fungi growth                                  | The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or that are injurious to health, recreation, or industry may not be allowed.               | DEQ does not expect change in proposed activity to promote growth of fungi.                             | No                 |
| 340-041-0007(10) | Tastes and odors                              | Prevents the creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the palatability of drinking water or the palatability of fish or shellfish. | DEQ does not expect change in proposed activity to impact taste, odor, or palatability characteristics. | No                 |
| 340-041-0007(11) | Bottom sludges or deposits                    | The formation of bottom or sludge deposits deleterious to habitat and aquatic life are not allowed.   | Changes to proposed action are unlikely to affect this criterion.                                       | No                 |
| 340-041-0007(12) | Discoloration, scum, oily sheens, or floating | Objectionable discoloration, scum, oily sheen, floating solids or coating aquatic life with oil films is not allowed.   | Oil may be used in modified spillway and trap and haul systems.   | Yes                |
| 340-041-0007(13) | Aesthetic conditions                          | Aesthetic conditions offensive to human senses are not allowed.   | Proposed action is unlikely to promote offensive aesthetic conditions.                                  | No                 |
| 340-041-0007(14) | Radioisotopes                                 | Radioisotope concentrations may not exceed maximum permissible concentrations or pose an external radiation hazard.   | The Project does not utilize, store, or produce radioactive material.                                   | No                 |
| 340-041-0009     | Bacteria                                      | Limits discharge of bacterial cells, raw sewage, animal waste runoff, sewer overflows, and other sources of bacterial pollution.  | The Project does not discharge sewage, animal wastes, or bacterial pollution.                           | No                 |
| 340-041-0011     | Biocriteria                                   | Waters of the State must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.  | Flows may alter the ecological integrity necessary to support an adaptive biological community.         | Yes                |
| 340-041-0016     | Dissolved Oxygen                              | Sufficient dissolved oxygen is necessary to support aquatic life.   | Project diversions and discharge may directly affect oxygen saturation.                                 | Yes                |
| 340-041-0019     | Nuisance Phytoplankton Growth                 | Algal growth that impairs the recognized beneficial uses of the water body is not allowed.  | Changes to proposed action are unlikely to promote phytoplankton growth.                                | No                 |
| 340-041-0021     | pH  | pH values may not fall outside the basin-specific range of 6.5-8.5.   | Changes to proposed action are unlikely to cause excessive pH excursions.                               | No                 |
| 340-041-0028     | Temperature                                   | Water temperature must support all life stages of temperature-sensitive aquatic communities.  | Project activities may affect thermal capacity of discharge.  | Yes                |
| 340-041-0031     | Total Dissolved Gas                           | Protects aquatic life from gas bubble trauma caused by water supersaturated with atmospheric gases.   | Modified discharge below Trail Bridge Dam may affect saturation potential.                              | Yes                |
| 340-041-0032     | Total Dissolved Solids                        | Standard generally prohibits TDS concentrations which exceed basin-specific criterion of 100 mg/l.  | Proposed action is not expected to increase dissolved solids.   | No                 |
| 340-041-0033     | Toxic Substances                              | Discharge of toxic material that affects aquatic life or human uses is not allowed.   | Proposed action will not discharge toxic substances.  | No                 |
| 340-041-0036     | Turbidity                                     | Numeric criterion generally prohibits turbidity increases which exceed 10-percent above background.   | Modified discharge below Trail Bridge Dam may affect turbidity.   | No                 |
| 340-041-0350     | Three-Basin Rule                              | New and/or increased waste discharges are prohibited in three Oregon basins, including the McKenzie above RM15.   | Fundamental operation remains unchanged.  | No                 |

# 4.1 Objectionable Discoloration, Scum, and Oily Sheens

## 4.1.1 Applicable Standard

Oregon Administrative Rules 340-041-0007(12) spell out the standard: *Objectionable discoloration, scum, oily sheens, or floating solids, or coating of aquatic life with oil films may not be allowed.*

This narrative standard extends protections to surface waters against conditions that humans may reasonably find objectionable or which be harmful or deleterious to aquatic life.

## 4.1.2 Present Conditions

The Carmen-Smith Project operates numerous pieces of equipment that contain oil or other chemical liquids. The project also stores petroleum fuels, greases and lubricants at several locations. EWEB developed a Spill Prevention Control and Countermeasure Plan, revised January 2018, under the federal requirements given in 40 Code of Federal Regulations 112. The objective of the plan is to prevent the discharge of oil and/or hazardous substances. The plan proposes to accomplish this objective through spill prevention strategies, engineered secondary containment features, and contingency plans to guide decision-making in the event of a release. Oregon requirements to address spill response and cleanup of hazardous materials are also given in Oregon Revised Statute 466.605.

DEQ's 2011 section 401 evaluation determined that the use of small quantities of petroleum products would not likely cause adverse or objectionable conditions. The greatest risk remains the accidental release of liquid petroleum products used or stored adjacent to open waterways. The remote location of the project relative to first responders underscores the need to maintain employee training and awareness programs and adequate stores of spill response equipment necessary to contain and control releases of hazardous materials.

## 4.1.3 DEQ Evaluation

DEQ expects operation and maintenance of the proposed facilities to rely on petroleum lubricants, oils, and greases in a manner similar to how these products are used in other existing mechanical applications. For this reason, DEQ believes the protocol presented in the existing plan provides reasonable protection against risks associated with mechanical equipment operation and maintenance. DEQ expects EWEB will update the existing plan upon completion of construction to address spill prevention and response procedures specific to project changes.

## 4.1.4 DEQ Findings

DEQ is reasonably assured project operation under a new FERC license will not violate the state narrative criteria for objectionable discoloration, scum, and oily sheens provided the following measures are implemented:

### Spill Prevention Control and Countermeasure Plan

EWEB must implement the spill prevention and response measures as presented in the plan. EWEB must periodically update the plan as required by federal regulations or as warranted to reflect changes in project operation, use of materials, or strategic change in response procedures.

### Best Management Practices

When using materials that could harm water quality if spilled, EWEB must employ appropriate best management practices. All materials must be used correctly and for their intended purpose. EWEB may consult the manufacturer for guidance related to appropriate application methods, recommended cleanup procedures, appropriate storage, and acceptable disposal protocols.



### Notification

If there is a petroleum or hazardous substances spill or release or threatened spill or release to waters of the state at or above reportable quantities, EWEB must implement the spill response procedures in the Spill Prevention Control and Countermeasure Plan, notify the Oregon Emergency Response System, and comply with Oregon Revised Statutes Chapters 466 and 468, as applicable.

### Recordkeeping

For the term of the new FERC License, EWEB shall retain records for the period required by law which document:

- modifications to the Spill Prevention Control and Countermeasure Plan,
- reportable releases,
- visual observations and/or photographic documentation of hazardous material releases which impact aquatic resources,
- remedial activities undertaken by EWEB or a contractor to address hazardous material releases,
- correspondence and/or conversation records which document agency notification, as warranted regarding hazardous material releases,
- other records deemed appropriate

## **4.2 Biocriteria**

### **4.2.1 Applicable Standard**

The standard is given in Oregon Administrative Rules 340-041-0011:

*Waters of the State must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.*

The biocriteria standard complements parameter-specific standards by extending broad protections to all designated beneficial uses with the implicit assumption that if the most sensitive beneficial use is protected, then all uses will be protected. Application of the biological criteria standard is intended to assess the overall impact to the aquatic community from water quality changes attributable to a man-made activity.

### **4.2.2 Present Conditions**

Compliance with the biocriteria standard may be demonstrated using a variety of methods. In 2004, EWEB studied the ecological integrity of macroinvertebrate communities in the project area. The purpose of the study was to compare the abundance and complexity of benthic assemblages within the project area with communities unaffected by the project. DEQ's 2011 section 401 evaluation concluded that the abundance and complexity of benthic assemblages within the project area are generally comparable to benthic communities found elsewhere within the Western Montane Highlands sub-region of the Cascades ecoregion. DEQ concurred with the findings that suggest benthic production in the project area is stable and sufficient to sustain existing healthy fisheries at current levels.

DEQ's 2011 section 401 evaluation also considered other effects of hydropower operation on aquatic resources. Currently, Carmen-Smith developments restrict the historic range and distribution of native resident and migratory fish, alter the natural hydrograph, diminish gravel and large wood recruitment, affect water quality, and reduce sediment transport. Under a new license, EWEB will undertake tasks described in the 2016 Settlement Agreement to minimize and mitigate effects of project operation. These include commitments to increase flow in project bypass reaches, habitat protection measures including gravel and large wood placement, fish passage above and below Trail Bridge Dam, and spill reduction and ramping procedures for the Smith bypass reach.

### 4.2.3 DEQ Evaluation

DEQ's 2011 section 401 evaluation concluded there was reasonable assurance that operation of the Project under a new FERC License will comply with the biological criteria water quality standard. Based on our evaluation of changes to the proposed activity, DEQ maintains its earlier finding that there is reasonable assurance that project operation will meet the biological criteria water quality standard.

This determination is based on DEQ's understanding that the proposed upstream and downstream passage facilities will provide opportunities for fish movement as described in Sections 4.1.2 and 4.1.3 of the Aquatics Management Plan. DEQ recognizes several ways these changes may provide further support for the biological criteria. First, under the proposed action EWEB shall stop routine operation of the Trail Bridge Power Plant upon completion of the upstream and downstream fish passage facilities. This action will reduce or eliminate adverse impacts caused by turbine entrainment. Second, the proposed activities eliminate the need for a fish ladder and downstream bypass pipe. Because the discharge points for these structures were several hundred feet below Trail Bridge Dam, full flow conditions in the McKenzie River will now occur immediately below Trail Bridge Dam.

Based on its review of changes to the proposed activity, DEQ concludes the project will maintain support for the biological criteria water quality standard.

### 4.2.4 DEQ Findings

Because the proposed changes will provide fish passage, reduce or eliminate turbine entrainment, and result in full flow immediately below the Trail Bridge Dam, conditions for fish near Trail Bridge dam will improve. Based on our review of the changes to the proposed activity and in consideration of our 2011 section 401 evaluation, DEQ finds there is reasonable assurance that operation of the Carmen-Smith hydro project under a new license will not violate Oregon's biological criteria water quality standard provided EWEB complies with the conditions to this section 401 water quality certification.

## 4.3 Temperature

### 4.3.1 Applicable Standard

The standard is given in Oregon Administrative Rules 340-041-0028:

*The purpose of the temperature criteria in this rule is to protect designated temperature sensitive beneficial uses, including specific salmonid life cycle stages in waters of the State.*

Biologically based numeric temperature criteria applicable to the project are determined by the Fish Use and Spawning Maps presented as Figures 340A and 340B of Oregon Administrative Rule 340, Division 041. Figure 340A designates the entire project as suitable habitat for bull trout. The seven-day-average maximum temperature of a stream identified as having bull trout spawning and juvenile rearing use is 12.0 degrees Celsius year round.

In January 2011, DEQ issued EWEB a section 401 water quality certification for the Carmen-Smith hydroelectric project. DEQ's 2011 section 401 analysis relied on the natural conditions criterion, given in Oregon Administrative Rules 340-041-0028(8), to conclude that project operation would not contribute to degradation of temperature in the Smith bypass reach. This rule allows natural thermal potential of the stream to supersede the biologically based criteria where site-specific characteristics prevent attainment of the numeric temperature criterion. DEQ did not apply the natural conditions criteria to any other reach in the project area.

On Feb. 28, 2012, the U.S. District Court for the District of Oregon invalidated EPA's approval of DEQ's natural conditions criterion for water temperature. Because of the court's decision, in August 2013, EPA disapproved Oregon's natural conditions criterion at OAR 340-041-0028(8), leaving the remainder of the temperature standard effective. Although the 2016 Settlement Agreement proposes no change in activity for this reach, DEQ may not

issue a new or modified section 401 water quality standard that relies on the natural conditions criteria. For this reason, DEQ must reanalyze the effect of the proposed action within the context of existing rules and modify the 401 certification accordingly.

### **4.3.2 Present Conditions**

During relicensing, EWEB modeled the predictive temperature response of providing block releases to the Smith bypass reach. The model results found the seven-day average of the daily maximum temperature in the Smith bypass reach reached a maximum of 12.9°C, slightly above the biologically based numeric criterion of 12.0°C, for about two weeks in early August. Similar modeling techniques concluded historic, pre-project temperatures in the Smith bypass reach exceeded 15°C during this same period. These results support the conclusion that project operation under the proposed release schedule will result in higher flows and cooler temperatures in the Smith bypass reach relative to historic, pre-project conditions.

DEQ's section 401 analysis of the Smith bypass reach referenced the natural conditions criteria, given in Oregon Administrative Rules 340-041-0028(8), that allowed the natural thermal potential of a stream to supersede biologically based criteria where site-specific characteristics prevent full attainment of the numeric temperature objective. Based on this finding, DEQ's 2011 section 401 evaluation concluded there was reasonable assurance the project would not violate the water quality standard for temperature in this bypass reach.

### **4.3.3 DEQ Evaluation**

DEQ evaluated the effect of scheduled reservoir releases on stream temperature in the Smith bypass reach. The purpose of the evaluation is to determine if water temperature in the Smith bypass reach under scheduled reservoir releases would meet the biologically based numeric criteria with the human use allowance of 0.3°C. As discussed more fully below, DEQ's evaluation concludes there is reasonable assurance the effects of implementing the protection, mitigation, and enhancement measures described in the 2016 Settlement Agreement will not cause a violation of the biologically based numeric temperature criterion in the Smith bypass reach.

#### *Model Analysis*

EWEB modeled the thermal response to reservoir releases in the Smith River using Stream Segment Temperature Model (SSTEMP), a one-dimensional stream segment model developed by the U.S. Geological Survey to predict steady state stream temperature. Because SSTEMP predicts daily maximum temperature using a regression equation, calibration of the model to observed data tends to overpredict maximum water temperatures. While DEQ recognizes the limitations of SSTEMP, its 2011 section 401 analysis concluded use of this model sufficiently demonstrated predicted bypass temperatures would be significantly below the natural thermal potential of the stream.

#### *Protection, Mitigation, and Enhancement Measures*

Section 4.3.5 of the Aquatics Management Plan establishes an objective of increasing the area of available spawning habitat in the Smith bypass to a minimum of 320 m<sup>2</sup> and maintaining this area for term of the new license. To meet this objective, EWEB will undertake certain habitat enhancement measures including the placement and maintenance of 2,000 tons of gravel suitable for Chinook salmon spawning.

DEQ recognizes that gravel placement may positively affect local water quality. Research indicates that hyporheic exchange from the margins of gravel bars tends to be cooler than the water column in the main channel. While augmentation alone is not expected to cool the entire reach, DEQ believes habitat enhancement efforts may result in localized zones of cold-water refugia. DEQ does not expect the effects of local hyporheic exchange to be reflected at the downstream monitoring location in the Smith bypass reach. However, DEQ understands that habitat enhancement measures may locally improve water quality conditions and provide additional support to designated beneficial uses.

#### *Adaptive Management*

EWEB's goal for habitat improvement in Smith bypass reach is to achieve a minimum of 320 m<sup>2</sup> of Chinook

salmon spawning habitat. Section 4.3.5.5 of the Aquatics Management Plan describes contingency measures to guide decision-making in the event this objective is not met. These measures include additional gravel placement (not to exceed the Gravel Cap), reevaluating the habitat maintenance objective, exploring other practical opportunities to increase habitat above Trail Bridge Dam, and the establishment of a mitigation fund (Smith Fund) to that enhance Chinook salmon, cutthroat trout, or bull trout spawning and rearing habitat within the project area.

DEQ recognizes that habitat protection measures, including gravel augmentation, in the Smith bypass reach provide support for beneficial uses and improve local water quality. The adaptive management procedures provided in the Aquatics Management Plan ensure the habitat objectives will be maintained in this reach for the term of the new license. DEQ will include a requirement to monitor temperature in the Smith bypass reach to confirm our expectation that this water quality standard will be met.

#### **4.3.4 DEQ Findings**

DEQ is reasonably assured that actions proposed for the Smith bypass reach will not cause a violation of Oregon's temperature water quality standard within the term of the new license.

### **4.4 Dissolved Oxygen**

#### **4.4.1 Applicable Standard**

Oregon Administrative Rules 340-041-0016:

*Dissolved oxygen (DO): No wastes may be discharged and no activities must be conducted that either alone or in combination with other wastes or activities will cause violation of the following standards: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:*

*(1) For water bodies identified as active spawning areas in the places and times indicated on the following Tables and Figures set out in OAR 340-041-0101 to OAR 340-041-0340: Tables 101B, 121B, 180B, 201B and 260B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B, (as well as any active spawning area used by resident trout species), the following criteria apply during the applicable spawning through fry emergence periods set forth in the tables and figures:*

*(a) The dissolved oxygen may not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;*

*(b) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels must not be less than 95 percent of saturation;*

*(c) The spatial median intergravel dissolved oxygen concentration must not fall below 8.0 mg/l.*

*(2) For water bodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen may not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen may not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen may not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and may not fall below 6.0 mg/l as an absolute minimum (Table 21)*

Bull trout use the project area for spawning and rearing juveniles. For the Willamette Basin, the dissolved oxygen spawning criterion (11.0 mg/l) applies from Aug. 15 to May 30. During the rest of the year (June 1 – Aug. 14), the cold-water dissolved oxygen criterion of 8.0 mg/l applies to waters within the project area.

#### **4.4.2 Present Conditions**

Measurements recorded during the 2004 and 2005 relicensing studies demonstrate dissolved oxygen generally met or exceeded the 11.0 mg/l numeric criterion or exceeded saturation at all McKenzie River monitoring locations within the Project area. At these locations, dissolved oxygen was at or near saturation and intergravel dissolved oxygen ranged from 11.1 mg/l to 11.6 mg/l. Water column dissolved oxygen and intergravel dissolved oxygen differed by no more than 1.0 mg/l at each paired monitoring location. Dissolved oxygen data was not collected during the rest of the bull trout spawning period or during the period when the cold water dissolved oxygen criteria applies.

#### **4.4.3 DEQ Evaluation**

Currently, water is discharged from Trail Bridge Reservoir through the Trail Bridge power plant or the spillway of Trail Bridge Dam. Under the 2016 Settlement Agreement, EWEB will undertake the following actions that may affect dissolved oxygen below Trail Bridge Dam:

- Design, build, operate and maintain a trap and haul upstream fish passage facility
- Modify the existing spillway, hoist and gate mechanism to provide downstream fish passage
- Stop operating the Trail Bridge turbine and powerhouse

EWEB expects the trap and haul attraction water supply will draw water from the existing turbine intake structure. To prevent injury to fish, EWEB must first decrease the pressure of the attraction water supply using a pressure reducing structure or microturbine installation. Reducing the pressure of the attraction water supply discharge may decrease oxygen saturation. However, flow through attraction water supply, 118 cfs to 154 cfs, is small compared with the normal operating discharge through the turbine of 800 to 1,600 cfs and for this reason is not expected to measurably affect dissolved oxygen below the dam.

Under a new license, EWEB will cease routine operation of the Trail Bridge powerhouse. Turbine discharge tends to reduce oxygen saturation. DEQ expects ceasing powerhouse operations will not negatively affect dissolved oxygen levels.

All water in excess of the trap and haul attraction water supply will be discharged through the modified spillway to provide downstream fish passage. The flip bucket at the end of the spillway creates hydraulic spray that aerates discharge. While use of the modified spillway is expected to increase oxygen saturation, the spillway ogee crest is higher in elevation than the turbine intake and, therefore, draws warmer water from the top of the reservoir that may have a lower oxygen saturation potential. Because Trail Bridge Reservoir has a relatively short hydraulic residence time, stratification is weak. Summertime measurements from 2004 and 2005 indicate a vertical temperature difference of less than 2.0°C. For this reason, DEQ believes the effect of increased aeration from discharge through the modified spillway will likely outweigh any negative effects from discharge drawn from higher reservoir elevations. To confirm this expectation, DEQ will require EWEB to monitor dissolved oxygen below Trail Bridge Dam.

#### **4.4.4 DEQ Findings**

The potential dissolved oxygen below the Trail Bridge Dam has not been modeled or estimated under the trap and haul fish passage proposal. Based on DEQ's understanding of the proposed activity and in consideration of our 2011 section 401 evaluation, DEQ is reasonably assured Project operations under a new FERC license will not cause or contribute to a violation of the dissolved oxygen criteria in the McKenzie River provided the following measures be implemented:

1. The Water Quality Management Plan EWEB developed pursuant to Condition 1 of the section 401 certification shall incorporate the dissolved oxygen monitoring requirements presented below:
  - a. To assess cumulative Project effects on dissolved oxygen in response to modifications to Project developments and/or operations, EWEB shall measure dissolved oxygen at USGS gauge 14158850 located approximately 0.2 miles below Trail Bridge Dam as provided in the plan. EWEB shall perform dissolved oxygen monitoring in accordance with a schedule as provided in the WQMP unless expressly authorized otherwise by DEQ.
2. Dissolved Oxygen Reporting:

Subject to this section 3.b. EWEB shall submit annual water quality monitoring reports to DEQ by Jan. 31 of each year. Each report shall include an analysis of dissolved oxygen monitoring data including graphical representation of daily minimum, maximum, and average temperature measurements. To evaluate dissolved oxygen data with the applicable criteria given in Table 21 of Oregon Administrative Rules 340-041-0016, EWEB shall also present data as 30-day mean minimum, seven-day mean maximum, and seven-day minimum mean.
3. Adaptive Management:
  - a. If monitoring data identify dissolved oxygen measurements in excess of the numeric criterion, DEQ may require EWEB to submit a report analyzing the situation, require additional monitoring or require EWEB to prepare and submit to DEQ an operations plan that shall propose corrective measures to attain the dissolved oxygen criteria in affected areas. Upon DEQ approval, EWEB shall submit the plan to FERC for approval. Upon FERC approval, EWEB shall implement the plan.
  - b. If DEQ determines monitoring demonstrates that the dissolved oxygen criteria are met, DEQ may allow EWEB to reduce or cease monitoring.

## 4.5 Total Dissolved Gas

### 4.5.1 Applicable Standard

OAR 340-041-0031

*Total Dissolved Gas: (1) Waters will be free from dissolved gases, such as carbon dioxide hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such water.*

*(2) Except when stream flow exceeds the ten-year, seven-day average flood, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection may not exceed 110 percent of saturation. However, in hatchery-receiving waters and other waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection may not exceed 105 percent of saturation.*

Spillways may increase total dissolved gas at hydroelectric facilities. Hydraulic momentum carries to deeper zones and may prevent escape of trapped gases. Under increased hydrostatic pressure, entrained gases drive into solution causing supersaturation.

### 4.5.2 Present Conditions

As described in the 2011 Evaluation and Findings Report, EWEB monitored total dissolved gas within the Trail Bridge powerhouse tailrace and at locations downstream of the powerhouse during the synoptic river surveys performed in May, August, October and December 2004. Based on six measurements recorded within the tailrace of the Trail Bridge powerhouse, mean and maximum total dissolved gas values were 103.2 percent and 109.7 percent of saturation, respectively. Based on five measurements recorded 550 feet downstream of the Trail Bridge powerhouse, mean and maximum values were 103.8 percent and 104.4 percent of saturation, respectively. Concentrations in the tailrace below Trail Bridge power plant were below 110 percent saturation during the four synoptic river events conducted in 2004.

EWEB did not measure total dissolved gas under the operating conditions proposed in the 2016 Settlement Agreement.

### **4.5.3 DEQ Evaluation**

Currently, water exits Trail Bridge Reservoir through the Trail Bridge power plant or the spillway of Trail Bridge Dam. As noted above, the fish passage proposal has changed to a trap and haul design. Under normal expected operation, flow through the attraction water system will range from 118 to 154 cfs. The balance of discharge below Trail Bridge Dam will be through the modified spillway. Under these conditions, no discharge through the turbine will occur.

EWEB expects the attraction water supply for the trap and haul facility to draw from the existing turbine intake. Discharge to the facility may require a pressure reducing mechanism. DEQ does not know what effect this mechanism may have on gas saturation. Fish contained within the trap area may be in close proximity to the attraction water discharge for prolonged periods prior to upstream movement. For this reason, DEQ will require monitoring for total dissolved gas below the dam to evaluate the potential effects of exposure to supersaturated conditions.

The upturned flip bucket at the end of the spillway prevents the type of hydraulic plunging that typically causes gas entrainment in receiving waters. However, no data exist to evaluate gas saturation in spillway discharge. Because the spillway is the mechanism proposed to provide safe and timely downstream movement of fish, DEQ will require monitoring for total dissolved gas below the dam under a range of flows to ensure attainment of the total dissolved gas criterion and support for beneficial uses.

### **4.5.4 DEQ Findings**

DEQ is reasonably assured that project operations under a new FERC license will not cause or contribute to a violation of the total dissolved gas numeric criterion in the McKenzie River provided the following measures be implemented:

1. The Water Quality Management Plan developed pursuant to Condition 1 of the section 401 certification must incorporate the total dissolved gas monitoring requirements presented below.
  - a. The monitoring plan shall include the following minimum components:
    - i. Proposed data collection procedures including description of equipment and methods
    - ii. Identification of monitoring locations
    - iii. Proposed evaluation procedures
2. Total Dissolved Gas Reporting:  
EWEB shall submit annual water quality monitoring reports to DEQ by Jan. 31 of each year.
3. Adaptive Management:  
If monitoring data identifies total dissolved gas measurements in excess of the numeric criterion, DEQ

may require EWEB to submit a report analyzing the situation or require additional monitoring or for EWEB to submit an operations plan that includes measures to reduce total dissolve gas in affected areas. Upon DEQ approval, EWEB shall submit the plan to FERC for approval. Upon FERC approval, EWEB shall implement the plan.

## **5.0 Evaluation of Compliance with Sections 301, 302, 303, 306 and 307 of the Federal Clean Water Act**

In order to certify a project pursuant to Section 401 of the federal Clean Water Act, DEQ must find that the project complies with applicable provisions of Sections 301, 302, 303, 306 and 307 of the act and state regulations adopted to implement these sections. Sections 301, 302, 306 and 307 of the federal Clean Water Act deal with effluent limitations, water quality related effluent limitations, national standards of performance for new sources and toxic and pretreatment standards. All of these requirements relate to point source discharges and are the foundation for conditions in National Pollutant Discharge Elimination System permits issued to the point sources. Point source discharges at hydroelectric projects may include cooling water discharges, stormwater and sewage discharges.

Section 303 of the Act relates to Water Quality Standards and Implementation Plans. EPA has adopted regulations to implement Section 303 of the act. The Environmental Quality Commission adopted water quality standards consistent with the requirements of Section 303 and the applicable EPA rules. The commission standards are in Oregon Administrative Rules Chapter 340, Division 41. EPA has approved the Oregon standards pursuant to the requirements of Section 303 of the act. Therefore, the project must comply with Oregon Water Quality Standards to qualify for certification. As discussed above in this report, the proposed project will comply with Oregon Water Quality Standards and therefore Section 303 of the Clean Water Act, provided the conditions to the Section 401 Certification are satisfied.

DEQ's 2011 section 401 evaluation found the project complies with Sections 301, 302, 303, 306, and 307 of the Clean Water Act. DEQ's evaluation of the proposed activity are consistent with our previous determination.

## **6.0 Evaluation Of Other Appropriate Requirements Of State Law**

Once a project is determined to qualify for a section 401 certification, additional determinations may be made to identify additional conditions that are appropriate in a certification to assure compliance with other appropriate requirements of state law, pursuant to section 401(d) of the Clean Water Act. Such requirements are appropriate if they have any relation to water quality, *Arnold Irrigation Dist. v. DEQ*, 79 Or. App. 136 (1986), and may include requirements as to water quantity if necessary to protect a beneficial use. *PUD No.1 of Jefferson Co. v.*



Washington Dept. of Ecology, 511 U.S. 700 (1994).

In its 2011, Section 401 evaluation, DEQ considered other appropriate requirements of state law with relevance to water quality. This document adopts the previous findings by reference in their entirety. When considering changes in proposed activities addressed in this evaluation, DEQ identified no additional state laws with relevance to the water quality applicable to the project.

## 7.0 Public Comment

On February 9, 2018, DEQ issued a public notice seeking public comment on the draft water quality certification and Evaluations and Findings Report. On March 6, 2018, DEQ held a public meeting and hearing at DEQ's Eugene office to discuss the proposed certification and to solicit input from the public. DEQ accepted comments on the draft decision through 5pm March 16, 2018.

DEQ received two comments on the proposed certification during the public comment period. A summary of the comments and DEQ's responses are presented below.

### Comment No. 1

Commenter(s): Sina Abdi; Lexie McMullen; William Dalquist; Rayne Jackson  
Date Received: February 27, 2018  
Summary: Commenters believe the proposed alterations to the Carmen-Smith Hydroelectric Project will ensure and protect the ecological and biological health in the upper McKenzie River. Commenters approve of the project and the conditions to the section 401 water quality certification. Comments included no recommendation to alter project.  
DEQ Response: Comments received and acknowledged.

### Comment No. 2

Commenter(s): Patty Boyle, EWEB Principle Project Manager  
Date Received: March 16, 2018  
Summary: EWEB believes the adaptive management requirements in Sections 4.d, 6c, and 8c of the draft certification are inconsistent with the adaptive management framework described in the 2016 Amended and Restated Settlement Agreement and the Aquatics Management Plan. Specifically, EWEB references the certification's adaptive management procedures that state DEQ may require EWEB to undertake certain actions (e.g., evaluate the circumstance, conduct monitoring, prepare and implement a plan in consultation with DEQ) in response to water quality violations. In contrast, EWEB states the adaptive management procedures in the 2016 Amended and Restated Settlement Agreement requires EWEB to consult with the Fisheries Work Group, of which DEQ is a member, to develop workable solutions that will meet the objectives of all Parties. EWEB requests DEQ modify the draft certification's adaptive management provisions to place EWEB in the lead role of developing a plan and schedule subject to consultation with and review and approval by the appropriate regulatory agencies. Finally, EWEB provided alternative language to reflect these procedures, which EWEB believes is more consistent with the framework contained in the 2016 Amended and Restated Settlement Agreement.  
DEQ Response: DEQ appreciates EWEB's suggested revisions to align the 401's adaptive management procedures more closely with those described in the 2016 Amended and Restated Settlement Agreement. Ultimately, DEQ finds the procedures described in Sections 4.d, 6c, and 8c of the draft certification do not conflict with the Settlement Agreement's adaptive management framework. For the reasons described more fully below, DEQ retains the adaptive management procedures described in Sections 4d, 6c, and 8c of the draft certification.

The adaptive management framework of the 2016 Revised and Restated Settlement Agreement requires EWEB to consult with the Fisheries Work Group during implementation of protection, mitigation, and enhancement measures described in the Aquatics Management Plan. While sections of the draft certification refer to many of the measures in the Settlement Agreement, Sections 4d, 6c, and 8c do not. Rather, these sections refer to compliance with specific water quality standards. Because the water quality standards referenced in these sections are not elements of the Settlement Agreement, DEQ believes the adaptive methods required by the certification are not in conflict with procedures for implementing measures described in the Settlement Agreement.

In addition, the Settlement Agreement does not diminish the authority of DEQ to require actions necessary to comply with the Clean Water Act and Oregon law. DEQ administers these laws and considers it appropriate to establish procedures, including an adaptive framework, deemed necessary to provide reasonable assurance of compliance with such laws. DEQ believes the procedures included in the draft certificate are necessary to ensure a sufficient adaptive approach to correct for project-related water quality impairment.

Last, EWEB states the certification “relies on the DEQ to dictate the actions required to address exceedances of the applicable water quality standard.” DEQ disagrees with this interpretation. Rather than dictating actions, Sections 4d, 6c, and 8c describe several possible scenarios, including the development of a plan in consultation with DEQ, to correct water quality impairments. DEQ believes the certification’s adaptive process appropriately places EWEB in the role of investigating and developing solutions to water quality impairments while maintaining the Department’s approval authority to ensure compliance with water quality standards.

In summary, DEQ finds the adaptive management provisions in Sections 4d, 6c, and 8c of the draft certification are appropriate and necessary to implement provisions of the Clean Water Act and Oregon law.

## **8.0 Conclusions and Recommendations For Certification**

DEQ has acted on EWEB’s request to evaluate changes to the proposed activity and, if necessary, modify the section 401 water quality certification. DEQ has determined the proposed project modifications change the way that the project will discharge water and, therefore, may have an effect on water quality.

Based on its review, DEQ has determined the proposed actions will comply with the applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act, Oregon Administrative Rules, Chapter 340, Division 41 and other appropriate requirements of state law, provided EWEB implements the section 401 conditions proposed in this document.

Based on the preceding analysis and findings, DEQ recommends that pursuant to section 401 of the Federal Clean Water Act and ORS 468B.040, the Director, or assigned signatory, conditionally approve the application for certification of the Carmen Smith Hydroelectric Project, FERC Project No. 2242, consistent with the findings of this document.