



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PO Box 47600, Olympia, WA 98504-7600 • 360-407-6000

June 27, 2024

Matthew Drumheller
U.S. Army Corps of Engineers
Walla Walla District
201 North Third Avenue
Walla Walla, WA 99362

Daniel Turner
U.S. Army Corps of Engineers
Northwestern Division
P.O. Box 2870
Portland, OR 97208

Re: Disapproval of Water Quality Attainment Plan

Dear Matthew Drumheller and Daniel Turner:

This correspondence constitutes the State of Washington Department of Ecology's (Ecology) disapproval of the U.S. Army Corps of Engineers' (USACE) Water Quality Attainment Plan (WQAP) for the Lower Snake River Dams: Lower Granite, Little Goose, Lower Monumental and Ice Harbor, submitted March 29, 2024.

Ecology's Clean Water Act Section 401 Certifications for the four hydroelectric generating facilities (Facilities) on the lower Snake River operated by USACE¹ (401 Certifications) and the U.S. Environmental Protection Agency's (USEPA) National Pollutant Discharge Elimination System (NPDES) permits into which the 401 Certifications are incorporated² require USACE to submit for approval a WQAP consistent with WAC 173-201A-510(5): *Compliance Schedules for Dams*. As temperature conditions are not currently meeting surface water quality standards, the compliance schedule tool allows the Facilities to maintain their regulatory obligation, while setting a schedule for future compliance. The compliance schedule condition for these Facilities requires WQAPs to include a detailed strategy for achieving Washington's water quality standards for temperature and associated designated uses.³

¹ More information found at <https://ecology.wa.gov/regulations-permits/permits-certifications/401-water-quality-certification>.

² These NPDES permits can be found at <https://www.epa.gov/npdes-permits/discharge-permits-federal-hydroelectric-projects-lower-snake-river>.

³ Ecology's Section 401 Certifications and USEPA's NPDES permits for USACE's five dams on the lower and mid-Columbia River impose these same obligations and Ecology will evaluate the required water quality attainment plan(s) for those dams based on these same criteria.

While Ecology acknowledges and appreciates that USACE consulted with Ecology on the development of the WQAP and the WQAP represents considerable progress toward approval, Ecology is disapproving the WQAP because it does not fully comply with WAC 173-201A-510(5). The submitted WQAP fails to include necessary details of the water quality temperature goal and potential actions to be evaluated for achieving Washington's water quality standards and associated designated uses.

Consistent with our previous comments and suggestions on drafts of the WQAP, the WQAP is deficient because it inappropriately incorporates other Endangered Species Act and National Environmental Policy Act processes and analyses, and fails to sufficiently identify and evaluate system-wide and dam-specific actions that, if feasible, USACE will implement to meet applicable temperature-related state water quality standards and USEPA Temperature Total Maximum Daily Load (TMDL) load allocations for the lower Snake River. Additionally, clarification from USEPA⁴ on the implementation of the TMDL in the WQAP has not been sufficiently incorporated into the submitted WQAP. Further details regarding the deficiencies that necessitate Ecology's disapproval of the WQAP and recommendations for revising the WQAP are enclosed with this letter.

Moving forward, Ecology is committed to continue collaborating with and providing guidance to USACE regarding what is needed to be included in an approvable water quality attainment plan for USACE's Facilities on the lower Snake River. Ecology also strongly encourages USACE to coordinate and facilitate advisory workgroup sessions so that other interested parties can assist USACE in revising the WQAP for final Ecology approval.⁵ We are accounting for the time USACE needs to work with Ecology and/or others in the required resubmittal timeline.

Ecology will allow USACE until September 1, 2024, to submit either:

- (1) a detailed schedule for revising the WQAP in cooperation with the advisory workgroup, or
- (2) a revised WQAP that;
 - (a) addresses the comments and suggestions by Ecology and USEPA enclosed with this disapproval and in previous communications,
 - (b) satisfies the requirements of WAC 173-201A-510(5), and
 - (c) includes a detailed strategy for achieving Washington's water quality standards for temperature and associated designated uses.

⁴ See enclosed letter from Jennifer Wu, USEPA, addressed to Melissa Gildersleeve, Ecology, and Daniel Turner, USACE.

⁵ This advisory workgroup should include, but not be limited to, the Washington Department of Fish and Wildlife (WDFW), the EPA, interested Tribes, and Ecology.

Matthew Drumheller and Daniel Turner

June 27, 2024

Page 3

Please direct any questions to Thomas Starkey-Owens, at thst461@ecy.wa.gov or (564) 233-1980.

Sincerely,



Vincent McGowan, P.E.

Water Quality Program Manager

cc: Kathryn Tackley, USACE, Kathryn.L.Tackley@usace.army.mil
Mishael Umlor, USACE, Mishael.Umlor@usace.army.mil
Martin Merz, USEPA, Merz.Martin@epa.gov
Jennifer Wu, USEPA, Wu.Jennifer@epa.gov
John Palmer, USEPA, Palmer.John@epa.gov
Thomas Starkey-Owens, Ecology, Thomas.Starkeyowens@ecy.wa.gov
Chad Brown, Ecology, Chad.Brown@ecy.wa.gov
Heather Bartlett, Ecology, Heather.Bartlett@ecy.wa.gov
Adam Levitan, WA ATG, Adam.Levitan@atg.wa.gov

Enclosures:

Details on Ecology's decision for disapproval and recommendations for revision.

Letter from Thomas Starkey-Owens, Ecology, addressed to Daniel Turner, USACE, February 29, 2024.

Letter from Jennifer Wu, USEPA, addressed to Melissa Gildersleeve, Ecology, and Daniel Turner, USACE, February 28, 2024.

WQAP Scoping Documents for Ice Harbor, Little Goose, Lower Monumental and Lower Granite.

Ecology 2023, Ecology's Guidance for Preparing a Dam Compliance Schedule Request and Water Quality Attainment Plan.

Enclosure – Details on the Washington Department of Ecology’s (Ecology) decision for disapproval and recommendations for revising the Water Quality Attainment Plan (WQAP) for temperature on the Snake River:

1. The WQAP fails to provide complete thresholds for temperature criteria and load allocation attainment.

Currently, the WQAP does not explicitly state what temperature criteria thresholds the U.S. Army Corps of Engineers (USACE) is obligated to meet or what temperature criteria exceedances USACE must reduce to attain compliance. In other words, there is no clear “goal” for temperature criteria attainment or exceedance reduction on the Snake River over the proposed compliance schedule. The “goal” which is based on the water quality standards and any associated TMDL temperature reductions must be clear in order to identify and properly evaluate all reasonable and feasible improvements that could be used to meet the standards, as is required by part 5(b) of the compliance schedule rule.

The submitted WQAP briefly mentions the Washington State surface water quality standard (SWQS) for the Snake River⁶ (20°C) and the U.S. Environmental Protection Agency’s (USEPA) load allocation for dams (0.1°C or one third of the 0.3°C allowable temperature increment available for all sources) from the Columbia and Snake River Temperature Total Maximum Daily Load⁷ (TMDL) and its prescribed load allocations. However, the WQAP does not provide detailed information or language regarding USACE’s responsibility to meet these criteria or how temperature improvement actions at each hydropower dam will be evaluated relative to the combined SWQS and TMDL load allocations (hereafter “combined criteria”).

In an Ecology letter to USACE dated February 29, 2024,⁸ Ecology defined the goal as the USEPA-calculated load allocation exceedances identified in Tables 6-6 through 6-10 from the TMDL, which list the magnitude that temperature would need to be reduced relative to current conditions for USACE to attain the combined criteria (TMDL pages 55-59). USACE failed to incorporate this definition in the submitted WQAP.

WAC 173-201A-510(5)(c) clearly states the following:

“The [water quality attainment] plan must ensure compliance with all applicable water quality criteria, as well as any other requirements established by the department (such as through a total maximum daily load, or TMDL, analysis).”

To receive Ecology approval for the WQAP, USACE must directly address its obligations to meet the combined criteria on the Snake River, both in the WQAP and over a proposed compliance schedule. The WQAP should be clear and complete, therefore USACE must produce a detailed

⁶ WAC 173-201A-602: Use designations for fresh waters, <https://app.leg.wa.gov/WAC/default.aspx?cite=173-201A-602>

⁷ USEPA TMDL documentation found at <https://www.epa.gov/columbiariver/tmdl-temperature-columbia-and-lower-snake-rivers>

⁸ See enclosed letter from Thomas Starkey-Owens, Ecology, addressed to Daniel Turner, USACE.

strategy to attain the combined criteria, and temperature improvement actions must be identified, evaluated, and implemented over a proposed compliance schedule. Additionally, modeling and analytical methods need to be proposed, and approved by Ecology, to track the improvement of conditions over the proposed compliance schedule period. Moreover, Ecology will reject any future WQAP based on the USACE analysis of load allocations detailed in the Memorandum for the Record (MFR), submitted with the WQAP on March 29, 2024. Any language included in future WQAPs that retains the spirit and conclusion of the MFR, predominantly that USACE is already meeting the TMDL load allocations (and therefore the combined criteria) via status-quo operations (Example: cold water releases from Dworshak dam), will be subsequently disapproved. The concept of including the MFR in the WQAP submittal was developed during Ecology and USACE staff discussions as a mechanism for the USACE to include the alternate load allocation analysis for USACE's record. However, USEPA's letter to USACE dated February 28, 2024,⁹ makes clear the requirements of the TMDL load allocations. Therefore, any utilization of, or reference to, the MFR's load allocation analysis or the USACE-defined baseline condition therein is not an approvable component of the WQAP.

2. The WQAP includes the multiple objective (MO) alternatives and their predeterminations from the 2020 Columbia River System Operations Environmental Impact Statement (CRSO EIS).

As mentioned above, USACE received comments from Ecology on previous WQAP drafts from January to March 2024 prior to the final WQAP submission. In these comments, Ecology included requests to remove large sections of the WQAP that were directly copied from the CRSO EIS that are not pertinent or meaningful to meeting the combined criteria, including but not limited to the MO alternatives. Our requests for revision appear to have largely been ignored by USACE staff.

By their nature, MO alternatives are conglomerates of individual actions intended to balance multiple authorized purposes at each hydroelectric project¹⁰ whereas the WQAP's focus is to identify individual actions and provide a detailed strategy to meet the combined criteria. The submitted WQAP copies each of the MO's and the analyses performed to evaluate the MO's impacts on temperature relative to the 20°C SWQS on the Snake River. Additionally, the MO's include predetermined results of past evaluations from the CRSO EIS. Ecology has determined that the MO's, the results from past evaluations, and the information therein, are distracting and incomplete relative to USACE's obligations to produce a detailed WQAP. As we have previously stated the MO's, proposed in their entirety, are inconsistent with Ecology's guidance and USACE's obligations to follow evaluation methods consistent with the WQAP guidelines stated in the Compliance Schedule for Dams rule.

Ecology has communicated to USACE that certain aspects of the CRSO EIS may be appropriate to reference or use in the WQAP. For example, individual actions within each MO may be

⁹ Letter from Jennifer Wu, USEPA, addressed to Melissa Gildersleeve, Ecology, and Daniel Turner, USACE.

¹⁰ See Chapter 2- Alternatives of the CRSO EIS. Documentation found at <https://www.nwd.usace.army.mil/CRSO/Final-EIS/#top>

singled out separate from the CRSO EIS and evaluated within the WQAP evaluation methodology for potential future implementation (example: reservoir drawdown to minimum operating pool as detailed in MO4). Additionally, analytical methodologies for the evaluation of individual actions may be borrowed from the CRSO EIS if pertinent to temperature criteria attainment and approved by Ecology. Ecology also recognizes that a discussion of how the CRSO EIS contributed to current CRS operations and the relevant legal framework may be helpful as background information.

Instead of following Ecology's guidance regarding how the CRSO EIS fits into the WQAP, USACE recites large portions of analyses of the MO's from the CRSO EIS. Simply copying these CRSO EIS portions does not demonstrate how USACE will conduct a "reasonable and feasible" evaluation of actions to meet the combined criteria as required by the NPDES permits and 401 certifications.

Ecology's suggested revisions include, but are not limited to, the following: Any comparisons between Ecology's guidance for WQAP development and the CRSO EIS development process should be removed from future draft WQAPs.¹¹ All language and figures depicting irrelevant information or predeterminations from past evaluations and analyses of the CRSO EIS should be removed.¹² All figures and information pertaining to the CRSO EIS process, not pertinent to the WQAP process, should be removed for simplicity.¹³ In future drafts Ecology encourages USACE to single out individual actions for evaluation consistent with WQAP methodology in future drafts.

3. The WQAP fails to provide detailed information on novel temperature improvement actions or evaluation criteria and fails to provide an adequate compliance schedule.

Every measure identified in the submitted WQAP and listed in Appendix A: Temperature Metric Evaluation Table, is the result of preexisting USACE obligations and commitments. Virtually no novel actions or evaluation criteria have been identified. For example, the study of cold-water refuge projects and cold-water pumps have resulted from ongoing regional forum discussions and do not represent novel temperature improvement proposals. Ecology will need more detail and assurance that such actions, once implemented at the Snake River hydroelectric dams, would incrementally improve temperature conditions to the point of attaining the combined criteria over the proposed compliance schedule. If certain actions may not be implemented in the lower Snake River basin,¹⁴ then they should be removed from a WQAP intended to meet the combined criteria in the Snake River. Additionally, actions that were identified in the WQAP scoping documents are missing from the list of proposed measures in the submitted WQAP.¹⁵

¹¹ For example, Tables 2 and 3 in the submitted WQAP.

¹² For example, Tables 4 through 6 and Figures 1 through 8 in the submitted WQAP.

¹³ For example, Section 2.1- Public Scoping and Comment Review in the submitted WQAP.

¹⁴ See footnote #20 identified in Table 9 of the WQAP.

¹⁵ For example, operating below minimum operating pool, see section 6.2.3.3 in enclosed Ice Harbor, Little Goose, Lower Monumental and Lower Granite WQAP scoping documents.

Ecology appreciates the progress USACE has made to propose advisory workgroups in the form of a Regional Forum Task Group. This workgroup participation is necessary to further refine the WQAP, further identify novel temperature improvement actions, and add evaluation criteria and analytical methodologies to rank and ultimately implement temperature improvement actions at each hydroelectric dam for the purpose of attaining the combined criteria. However, in the submitted WQAP, the formation and timing of planned workgroup sessions is vague.

Unless USACE can demonstrate that currently identified actions in the WQAP are likely to be implemented and meet the temperature requirements within the Compliance Schedule timeline, further work to identify and evaluate other novel improvement actions must be included in the WQAP. We recognize this may take additional time and resources. Ecology is committed to working with USACE to continue identifying temperature improvement actions for evaluation and implementation in the WQAP. Ecology recommends the immediate coordination and facilitation of advisory workshop sessions to continue refining the WQAP for final Ecology approval. Before advisory workgroup sessions begin, Ecology will need a more detailed USACE proposed schedule that reflects USACE's commitment to coordinate and facilitate workgroup sessions concurrently with all interested parties, including but not limited to, Ecology, USEPA, the Washington Department of Fish and Wildlife (WDFW), and interested Tribes. These advisory workgroup sessions should select evaluation criteria and identify additional temperature improvement actions. From these advisory workgroup sessions, USACE would propose a new compliance schedule for the evaluation and implementation of all additional improvement actions resulting from the advisory workgroup.

USACE has provided previous comments to Ecology that there is no requirement within WAC 173-201A-510(5): Compliance Schedule for Dams that requires engagement with interested parties to develop and evaluate improvement actions. This requirement is implicitly included in the rule as dam operators must evaluate and implement any reasonable and feasible technologies to improve temperature prior to proposing an alternative method to achieving compliance (i.e. site-specific criteria, use attainability analysis, or water quality offset).¹⁶ Each alternate method to compliance that may be available to USACE after one or more compliance schedules must, by state law, include a public process. If USACE did not work with interested parties during the WQAP process to identify all reasonable and feasible improvements, USACE would need to evaluate all improvement ideas that are identified during the public process for the alternate compliance methods. Furthermore, it is unreasonable for USACE to take the position that it will identify all possible improvement options without engaging interested parties. Ecology therefore recommends that USACE immediately coordinate and continue to include the advisory workgroup in the improvement action identification and evaluation process.

4. Ecology disagrees with the USACE “concepts” for the preparation of the WQAP.

¹⁶ See WAC 173-201(A)-510 (g), <https://app.leg.wa.gov/WAC/default.aspx?cite=173-201A-510>.

USACE developed a list of guiding concepts that were applied when developing the WQAP and the nature and spirit of its contents.¹⁷ Ecology is concerned with most of these concepts as they are not required elements of the WQAP and generally undermine Ecology's confidence in USACE's commitment to collaborate with Ecology, in good faith, toward improving temperature in Washington's waters. These concepts and Ecology's concerns are detailed below:

I. The Corps is only responsible for addressing the temperature impacts of its projects.

A WQAP for non-attaining standards is not an appropriate forum to dispute or redefine the conditions and requirements set by the NPDES permits, 401 certifications and WAC 173-201A-510(5): Compliance Schedule for Dams. Rather than explicitly acknowledge that one of these conditions and requirements is to meet the combined criteria and detail in the WQAP how it will do so, USACE appears to suggest in *Concept I* that it need only offset the temperature impacts of its dams and in later sections of the WQAP that it is already operating in a way that offsets its dams' impacts on temperature. For example, Section 4.4: Dworshak- Lower Snake Temperature Operation, page 52 states:

"The impact of the Dworshak- Lower Granite temperature is still notable downstream of Ice Harbor dam (Figure 19). As seen in 2023, the water temperature is typically cooler downstream of the four lower Snake River dams than it is upstream during the summer when temperature exceeds 68°F (20°C)."

Ecology acknowledges the tremendous impact Dworshak cold water releases have on the lower Snake River. However, water quality standards are not currently being met in Washington's waters which has resulted in a temperature TMDL that requires USACE to meet the combined criteria at each of its hydroelectric dams. Concept I is directly and indirectly referenced throughout the submitted WQAP. The USACE's suggestion that temperatures at the Lower Snake dams is already fully mitigated is inconsistent with the temperature TMDL and the requirements of the WQAP. The WQAP should include explicit language regarding compliance with the combined criteria.

II. The Clean Water Act cannot be used to override a prior act of Congress (i.e., authorizing construction and operations and maintenance (O&M) of dams) by implication.

The language in WAC 173-201A-510(5)(b)(ii) clearly states the following:

"Identification of all reasonable and feasible improvements that could be used to meet standards, or if meeting the standards is not attainable, then to achieve the highest attainable level of improvement."

Contrary to the suggestion in concept II, "all reasonable and feasible improvements" must be evaluated without predetermination and the results are subject to Ecology's

¹⁷ See Section 1.5- Conceptual Approach in the submitted WQAP.

review. Furthermore, WAC 173-201A-510(5)(b)(ii) does not permit dam operators to selectively identify certain improvement actions, while avoiding an evaluation of others, due to prior commitments or project purposes. Additionally, as outlined in Ecology's WQAP development guidance document,¹⁸ the primary focus of all identified actions should be incremental improvements toward the magnitude, duration and/or frequency of temperature exceedances at the hydropower dams. Ecology allows dam operators to include additional factors (i.e., project purposes) when considering improvement action implementation, but not before actions are, first and foremost, identified and evaluated through the lens of water quality improvements. In other words, all actions should be identified and evaluated regardless of prior commitments, cost, projects purposes, etc. USACE must correct this misinterpretation of Ecology's authority and the requirements of WAC 173-201A-510(5), the NPDES permits, and 401 certifications to make the WQAP approvable.

- III. *The Corps, where possible, collaborated with the State of Washington and the EPA to assess/develop the WQAP. The Implementation of this plan calls for further collaboration through the Regional Forum.*

The first sentence in concept III echoes language from the 2023 Resilient Columbia Basin Agreement (hereafter "the Agreement") between the U.S. Government and the Six Sovereigns.¹⁹ Although Ecology concurs that the implementation of the WQAP will require further collaboration with an advisory workgroup, we request that any language referencing the Agreement, taken directly from the Agreement, or otherwise suggesting the fulfillment of the commitments outlined in the Agreement, be removed from the WQAP. Additionally, USACE, Ecology, and USEPA have more work to do to assess/develop a WQAP that meets the requirements in WAC 173-201A-510(5), the 401 Certifications, and NPDES permits.

The Agreement does not alter USACE's obligation to comply with the NPDES permits, 401 certifications, and WAC 173-201A-510(5) requirements by meeting the combined criteria and developing and submitting a WQAP identifying how it will do so. The WQAP is not the appropriate forum to dispute or determine the U.S. Government's fulfillment of commitments outlined in the Agreement. The Agreement is referenced directly and indirectly throughout the submitted WQAP. Ecology looks forward to continuing to work collaboratively with USACE on the development of an approvable WQAP but requests that these references be removed from future drafts, including Concept III.

- IV. *This WQAP documents the Corps' temperature evaluation in the EIS, current temperature operations, related activities in the Regional Forum, and additional temperature measures with the intention of meeting Ecology's requirements.*

¹⁸ See enclosed Ecology 2023, Ecology's Guidance for Preparing a Dam Compliance Schedule Request and Water Quality Attainment Plan.

¹⁹ More information on the 2023 Agreement found at <https://earthjustice.org/press/2024/earthjustice-plaintiffs-join-in-white-house-ceremony-uplifting-historic-columbia-basin-restoration-agreement>

Ecology has consistently communicated that it is insufficient for USACE to simply copy or document parts of the CRSO EIS with the expectation that doing so complies with the requirements in the NPDES permits, 401 certifications and WAC 173-201A-510(5) (See #2 above). Ecology has been very clear regarding the specific aspects of the CRSO EIS that are effective for use in the WQAP, yet these directions appear to have been largely ignored. Major revisions to the WQAP will be needed for Ecology approval, including but not limited to the removal of Section 2.6: Temperature Evaluation Results, and figures and tables therein, in the submitted WQAP.

- V. *The analysis used to develop this WQAP utilizes the Corps' models to simulate the temperature impact of operations.*

Concept V should not be confused with the implementation of the USACE-defined baseline condition as described in the MFR, which essentially acts to transform the cumulative impacts of the USACE hydroelectric projects by removing the cooling effect of Dworshak dam cold water releases from status-quo operations. As mentioned above, any use of the USACE-defined baseline condition does not conform to the TMDL and is therefore not approvable in the WQAP.

The TMDL load allocations must be completely implemented into an approvable WQAP. Therefore, to simulate the attainment of the combined criteria, USACE must produce a WQAP that utilizes a model that closely resembles and implements the same baseline condition as outlined in the TMDL to predict and track temperature improvements at each hydroelectric project. Ecology will be in regular communication and will request modeling workshops to provide guidance in the development and simulation of the baseline condition needed for WQAP approval. Ecology recommends that USACE communicate with USEPA early and often during the development of the modeled baseline condition for implementation in the WQAP. Additionally, Ecology expects the advisory workgroup sessions to identify improvement actions and advise the development of evaluation criteria and metrics for USACE analyses that will ultimately influence the selection and implementation of identified improvement actions.

The comments above broadly capture Ecology's concerns with the submitted WQAP and the USACE guiding concepts. Ecology Hydropower Compliance staff, including Thomas Starkey-Owens and Chad Brown, are available to address questions regarding necessary revisions, will be available for further collaboration and will aid in the coordination of future advisory workgroup sessions. Ecology staff can also provide a mark-up version of the submitted WQAP that provides more detailed line-by-line comments to USACE staff in follow up meetings. Contact information is listed below.

Thomas Starkey-Owens
Hydropower Aquatic Resource Scientist
Washington Department of Ecology

Chad Brown
Hydropower Unit Supervisor
Washington Department of Ecology

Enclosure Page 8

Water Quality Program
thst461@ecy.wa.gov
(564) 233-1980

Water Quality Program
chbr461@ecy.wa.gov
(360) 522-6441



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PO Box 47600, Olympia, WA 98504-7600 • 360-407-6000

February 29, 2024

Dan Turner
US Army Corps of Engineers
Northwestern Division
PO Box 2870
Portland, OR 97208-2870
Sent via email: Daniel.F.Turner@usace.army.mil

Re: April 1, 2024 Water Quality Attainment Plan for the U.S. Army Corps of Engineer (USACE)
Hydropower Dams on the Lower Snake River (LSR).

Dear Dan Turner:

Thank you for the regular meetings and for helping me get oriented to your facilities on the Columbia and Snake Rivers. The Department of Ecology (Ecology) requests your further assistance in preventing pollution in the form of high water temperature in the LSR. Our work is part of a broad effort that identifies and improves water temperature problems at tributaries, point sources and non-point sources like the four USACE hydropower dams on the LSR. We appreciate the time spent working with you on your Water Quality Attainment Plan (WQAP) and compliance schedule as required by Washington's Surface Water Quality Standards (Washington Administrative Code (WAC) 173-201A). In talking with Ecology's management team, we thought it would be helpful to send a formal letter outlining exactly what we need for your April 1, 2024, WQAP deadline.

After the April 1, 2022 issuance of four the National Pollution Discharge Elimination System (NPDES) permits by the U.S. Environmental Protection Agency (USEPA), USEPA and Ecology set an April 1, 2024 deadline for approvable WQAPs for the LSR facilities; Lower Granite, Little Goose, Lower Monumental, and Ice Harbor dams. The WQAPs must address water temperature within a compliance schedule up to ten years as conditioned in Ecology's 401 certifications. Additionally, Ecology has communicated with USACE that we are implementing Washington's Surface Water Quality Standards (SWQS) as described in WAC-173-201A-510 (5). In addition to a series of related meetings with USACE staff since the issuance of the NPDES permits, in January 2024, USACE and Ecology began holding bi-weekly meetings on topics such as: Ecology's guidance (See Ecology Compliance Schedule and WQAP Guidance Document, March 2023), operations identified in the Columbia River System Operations Environmental Impact Statement (CRSO EIS), regional forums, the USEPA Columbia and Snake River Temperature Total Maximum Daily Load (hereafter "TMDL") and the U.S. Government's recent 2023 memorandum of understanding (MOU) with the six sovereigns. We appreciate your efforts to discuss these items with us. As we have addressed in

these meetings, we understand that there are other activities related to Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA) compliance in which temperature conditions are considered at the LSR facilities. However, Washington's 401 water quality certifications require USACE to submit a complete WQAP that includes the compliance schedule requirements spelled out in our rules including, WAC 173-201A-510(5) (c): *The plan must ensure compliance with all applicable water quality criteria, as well as any other requirements established by the department (such as through a total maximum daily load, or TMDL, analysis).*

USACE's hydropower dams in the LSR are identified as significant heat sources contributing to exceedances of SWQS for temperature frequently observed June-September. Under Ecology's 401 certifications and USEPA's NPDES permits, USACE is responsible for meeting SWQS and load allocations at each hydropower dam covered by the TMDL. As part of Ecology's implementation of the TMDL, USACE must utilize the magnitude of current allocation exceedances at each hydropower dam as a guide for the temperature reductions necessary to meet SWQS and load allocations. Although we have agreed for efficiency, USACE may submit one WQAP for the four LSR facilities, the WQAP must assess current temperature conditions and include an evaluation of any dam-specific actions for the purpose of reducing temperature in the LSR to meet each load allocation.

In the WQAP, dam-specific and system-wide actions to achieve SWQS and USEPA load allocations should be identified and evaluated for each dam that has its own separate Washington 401 certification. In doing so, the USACE can address the temperature issues that the USACE hydropower dams are contributing to the Columbia-Snake River system. While our team has communicated WQAP requirements and provided supplemental guidance documents, I realize it may be helpful to see the WAC in writing. I am listing them below to specifically outline what is required and to provide additional clarity to supplement our conversations since the permits were issued. My comments are included within the codes below:

WAC 173-201A-510:

(5) Compliance schedules for dams:

(a) All dams in the state of Washington must comply with the provisions of this chapter.

(b) For dams that cause or contribute to a violation of the water quality standards, the dam owner must develop a water quality attainment plan that provides a detailed strategy for achieving compliance. The plan must include:

(i) A compliance schedule that does not exceed ten years;

This is a schedule for implementing the actions that have been identified and evaluated in the WQAP. Please note that a schedule of ten years is not a requirement. The schedule may be a shorter period if the USACE can provide a detailed plan for attaining compliance within the proposed period of time.

(ii) Identification of all reasonable and feasible improvements that could be used to meet standards, or if meeting the standards is not attainable, then to achieve the highest attainable level of improvement;

The USACE must include a detailed list of all actions to be evaluated and if feasible, implemented, to address the temperature impacts at each LSR hydropower dam. i.e. actions must be identified at each individual facility to address the temperature impairments that facility is causing. The actions can be physical modifications, studies for future modifications and any other means by which USACE proposes to have each facility meet standards. Operational and system-wide actions to address temperature between the four LSR hydropower dams may also be identified and evaluated in the larger list of actions.

(iv) Analytical methods that will be used to evaluate all reasonable and feasible improvements;

USACE will then evaluate the list of actions and identify which can be implemented over the proposed compliance schedule. In this case, the evaluation criteria must prioritize temperature and the impacts each action may have on the magnitude, frequency and duration of meeting the TMDL load allocations, thus meeting the SWQS. Actions should review and assess improvements in the magnitude, duration, and frequency of temperatures in excess of the TMDL load allocation. Following the prioritization of temperature, the evaluation process may then balance other USACE obligations and commitments in determining reasonable and feasible actions to be implemented in the compliance schedule.

(v) Water quality monitoring, which will be used by the department to track the progress in achieving compliance with the state water quality standards; and

Details on how USACE plans to deploy and/or maintain water quality sensors for compliance tracking at the LSR hydropower dams should be included in the WQAP. USACE should also include information on the acquisition and delivery of water quality monitoring data to Ecology throughout the compliance schedule. Additionally, novel modeling and other analytical methods will be necessary to track and report the success of implemented actions and attainment of load allocations and SWQS over the compliance schedule.

(vi) Benchmarks and reporting sufficient for the department to track the applicant's progress toward implementing the plan within the designated time period.

Each of the proposed actions you have identified in WAC-201A-510(5)(b)(ii) should have a schedule for key milestones towards implementation and reporting to Ecology. These milestones should be outlined as part of the WQAP compliance schedule. Details on the benchmarks in reporting should be further coordinated with Ecology.

(c) The plan must ensure compliance with all applicable water quality criteria, as well as any other requirements established by the department (such as through a total maximum daily load, or TMDL, analysis).

The water quality compliance level for each USACE hydropower dam is the temperature SWQS and load allocation identified in the USEPA TMDL (TMDL Table 6-3, page 50). The USEPA-calculated load allocation exceedances identified in Tables 6-6 through 6-10 define the magnitude that temperature would need to be reduced relative to current conditions for USACE to attain compliance in Washington (TMDL pages 55-59). Ecology-approved modeling and analytical methods will need to be developed to track the attainment of load allocations and SWQS over the compliance schedule.

(d) If the department is acting on an application for a water quality certification, the approved water quality attainment plan may be used by the department in its determination that there is reasonable assurance that the dam will not cause or contribute to a violation of the water quality standards.

(e) When evaluating compliance with the plan, the department will allow the use of models and engineering estimates to approximate design success in meeting the standards.

The use of novel modeling and engineering estimates will be necessary to evaluate the improvement that proposed actions have on the magnitude, frequency and duration of temperature allocation exceedances in the WQAP evaluation process. Additionally, novel modeling and other analytical methods will be necessary to track and report the success of implemented actions toward attainment of load allocations and SWQS over the compliance schedule.

(f) If reasonable progress toward implementing the plan is not occurring in accordance with the designated time frame, the department may declare the project in violation of the water quality standards and any associated water quality certification.

(g) If an applicable water quality standard is not met by the end of the time provided in the attainment plan, or after completion of all reasonable and feasible improvements, the owner must take the following steps:

(i) Evaluate any new reasonable and feasible technologies that have been developed (such as new operational or structural modifications) to achieve compliance with the standards, and develop a new compliance schedule to evaluate and incorporate the new technology;

(ii) After this evaluation, if no new reasonable and feasible improvements have been identified, then propose an alternative to achieve compliance with the standards, such as site specific criteria (WAC [173-201A-430](#)), a use attainability analysis (WAC [173-201A-440](#)), or a water quality offset (WAC [173-201A-450](#)).

System-wide alternatives outside the LSR hydropower dam project boundaries (e.g. Dworshak Dam cold water releases) that have already been accounted for in the TMDL cannot be used to meet the load allocations or SWQS in WQAPs for Columbia and Snake River USACE hydropower dams. Additionally, If USACE wishes to consider the concept of offsets to meet SWQS and load allocations, it may only be implemented after the above-mentioned process is completed to identify dam-specific actions. Offsets must be achieved in accordance with Washington State Regulations at WAC 173-201A-450 (included below for reference);

WAC 173-201A-450:

Water quality offsets.

(1) A water quality offset occurs where a project proponent implements or finances the implementation of controls for point or nonpoint sources to reduce the levels of pollution for the purpose of creating sufficient assimilative capacity to allow new or expanded discharges. The purpose of water quality offsets is to sufficiently reduce the pollution levels of a water body so that a proponent's actions do not cause or contribute to a violation of the requirements of this chapter and so that they result in a net environmental benefit. Water quality offsets may be used to assist an entity in meeting load allocations targeted under a pollution reduction analysis (such as a total maximum daily load) as established by the department. Water quality offsets may be used to reduce the water quality effect of a discharge to levels that are unmeasurable and in compliance with the water quality antidegradation Tier II analysis (WAC 173-201A-320).

(2) Water quality offsets may be allowed by the department when all of the following conditions are met:

(a) Water quality offsets must target specific water quality parameters.

(b) The improvements in water quality associated with creating water quality offsets for any proposed new or expanded actions must be demonstrated to have occurred in advance of the proposed action.

(c) The technical basis and methodology for the water quality offsets is documented through a technical analysis of pollutant loading, and that analysis is made available for review by the department. The methodology must incorporate the uncertainties associated with any proposed point or nonpoint source controls as well as variability in effluent quality for sources, and must demonstrate that an appropriate margin of safety is included. The approach must clearly account for the attenuation of the benefits of pollution controls as the water moves to the location where the offset is needed.

(d) Point or nonpoint source pollution controls must be secured using binding legal instruments between any involved parties for the life of the project that is being offset. The proponent remains solely responsible for ensuring the success of offsetting activities for both compliance and enforcement purposes.

(e) Only the proportion of the pollution controls which occurs beyond existing requirements for those sources can be included in the offset allowance.

As we have mentioned in our meetings, it is within the interest of USACE to immediately coordinate WQAP workgroup meetings with all interested stakeholders, Tribes and Ecology to ensure that all potential actions can be identified for evaluation and prioritized for implementation within the compliance schedule period. We anticipate this work will help meet other commitments identified in other processes such as the MOU and it will help this proceed in a manner that encourages collaboration with others that care about getting temperature issues addressed in the Columbia/Snake watershed.

This letter is consistent with Ecology's and USACE's numerous conversations since the Clean Water Act 401 certifications (401 WQC) and EPA NPDES permits were issued. It is important to Ecology that USACE understands the requirements of the 401 WQCs that outline Washington's rule requirements. I understand that USACE may borrow from other ESA and NEPA processes and analyses. However, it is USACE's responsibility to compile all previous actions, identify any new actions, and include these in the WQAP evaluation process for temperature at each of your facilities that were issued 401 WQCs. The WQAP will not be approvable if it simply copies or points to actions that have been evaluated in other processes with similar yet different goals such as the CRSO EIS. Also, the WQAP should not prematurely remove actions from consideration before prioritizing impacts on temperature SWQS and load allocations. Any borrowed elements from previous projects and analyses must be reevaluated through the lens of temperature SWQS and load allocation exceedances before considering other USACE obligations.

We look forward to reviewing your WQAP for approval on the April 1, 2024. I am available for further questions regarding state water quality rules and to further discuss Ecology's expectations in the WQAP development process. I would also like to work with you to schedule a site visit to assist in our joint understanding of potential actions to improve temperature.

Sincerely,



Thomas Starkey-Owens
Hydropower Compliance & Research Scientist
Washington Department of Ecology
Water Quality Program

cc: Ben Cope, EPA, Cope.ben@epa.gov
Todd Maguire, EPA, Maguire.Todd@epa.gov
Jennifer Wu, EPA, Wu.Jennifer@epa.gov
Matthew Drumheller, USACE, Matthew.W.Drumheller@usace.army.mil
Kathryn Tackley, USACE, Kathryn.L.Tackley@usace.army.mil
Mishael Umlor, USACE, Mishael.Umlor@usace.army.mil
Christopher Peery, USACE, Christopher.A.Peery@usace.army.mil
Sarah Burnet, USACE, Sarah.H.Burnet@usace.army.mil
Chad Brown, Ecology, Chad.Brown@ecy.wa.gov



REGION 10
SEATTLE, WA 98101

February 28, 2024

Ms. Melissa Gildersleeve
Watershed Management Section, Water Quality Program
Washington Department of Ecology
PO Box 47600
Olympia, Washington 98504-7600
Sent via email to: melissa.gildersleeve@ecy.wa.gov

Mr. Daniel Turner
U.S. Army Corps of Engineers
Northwestern Division
PO Box 2870,
Portland, Oregon 97208-2870
Sent via email to: Daniel.F.Turner@usace.army.mil

Dear Ms. Gildersleeve and Mr. Turner:

Thank you for the meeting on January 31, 2024, to discuss development of the water quality attainment plans that are a requirement of the Washington Department of Ecology's Clean Water Act section 401 certifications for the National Pollutant Discharge Elimination System permits for the federal hydroelectric facilities in the Columbia and Lower Snake Rivers, issued by the EPA. As a follow-up to that meeting, EPA is clarifying the requirements of the Columbia and Lower Snake Rivers Temperature Total Maximum Daily Load as they relate to dams on the Columbia and Lower Snake Rivers.

As explained in Section 6.5 of the TMDL,¹ dam impoundments are allocated a cumulative temperature increase to the mainstem Columbia and Lower Snake Rivers of 0.1°C, or one third of the 0.3°C allowable temperature increment available for all sources. Thus, 0.1°C is the allowable impact of the dam impoundments cumulatively at any location. Values in Column H in Tables 6-6 through 6-10 in the TMDL display the dam impoundment "allocation exceedance" at each of the dam locations for June (Table 6-6) through October (Table 6-10). The "allocation exceedance" reflects the temperature reduction needed to meet the 0.1°C allocation for the dam impoundment.

¹ Available at <https://www.epa.gov/columbiariver/tmdl-temperature-columbia-and-lower-snake-rivers>

For example, at Ice Harbor Dam on the Lower Snake River, the “allocation exceedance” is 1.6°C for the month of August (See TMDL Table 6-8). 1.6°C reflects the cumulative impact of the four Lower Snake River dam impoundments in excess of the 0.1°C allowable increase at Ice Harbor Dam for the month of August. Likewise, 1.6°C is the reduction needed at Ice Harbor Dam to comply with the 0.1°C dam allocation in August.

As described in the TMDL, the goal of the TMDL is to achieve state and tribal temperature water quality standards, including attaining and maintaining the 20°C criterion in the Columbia and Lower Snake Rivers. To achieve this goal, temperature reductions are needed in the Lower Snake River and the Columbia River. Reducing temperatures to attain the 0.1°C allocation for the dams is a key element of the TMDL in attaining the water quality standards. The EPA recognizes that achieving the allocations represents a significant challenge for dam operations across the basin.

We hope this clarifies the requirements of the TMDL. Please contact me at Wu.Jennifer@epa.gov or Todd Maguire of my staff at Maguire.Todd@epa.gov, if you have any further questions.

Sincerely,

Jenny Wu, Manager
Watersheds Section

cc: Kathryn Tackley, U.S. Army Corps of Engineers
Matthew Drumheller, U.S. Army Corps of Engineers
Ben Rau, Washington Department of Ecology
Chad Brown, Washington Department of Ecology
Thomas Starkey-Owens, Washington Department of Ecology

WATER QUALITY ATTAINMENT PLAN TABLE OF CONTENTS FOR ICE HARBOR PROJECT

1.0 INTRODUCTION

- 1.1 NPDES Permit Requirements
- 1.2 Scope of Water Quality Attainment Plan

2.0 PROJECT AUTHORITIES, DESCRIPTION, AND OPERATION

- 2.1 Authorities
 - 2.1.1 Rivers and Harbors Acts of 1944 and 1945 (PL 79-14)
 - 2.1.2 Flood Control Act of 1962
 - 2.1.3 Fish and Wildlife Coordination Act (PL 85-624)
 - 2.1.4 Water Resources Development Act of 1976 (PL 94-587)
- 2.2 Project Description
 - 2.2.1 Project Location
 - 2.2.2 Project Authorized Purposes
 - 2.2.3 Physical Components
- 2.3 Basin Description
 - 2.3.1 Climate
 - 2.3.2 Runoff Characteristics
- 2.4 Operation
 - 2.4.1 Flood Control
 - 2.4.2 Navigation
 - 2.4.3 Power Plan
 - 2.4.4 Fish Passage

3.0 WATER QUALITY STANDARDS, DESIGNATED USES, AND NUMERIC CRITERIA

- 3.1 Clean Water Act (P.L. 92-500) (33 U.S.C. §1251 et seq.)
- 3.2 Temperature
- 3.3 pH
- 3.4 Chemical Oxygen Demand, Oil and Grease, Suspended Solids

4.0 HISTORICAL, EXISTING, AND FUTURE CONDITIONS

- 4.1 Temperature
 - 4.1.1 Historic Water Temperatures
 - 4.1.1.1 Monitoring and Data Analysis
 - 4.1.1.2 Historic Water Temperature Modeling Results
 - 4.1.2 Existing Conditions Compared to Water Quality Standard
 - 4.1.2.1 Inflowing Temperature Compared to Outflow
 - 4.1.2.2 Calculation of the Change in Temperature from Upstream to Downstream
 - 4.1.3 Natural Condition Temperature Estimate
 - 4.1.3.1 Methodology
 - 4.1.3.2 Evaluation of Current versus Natural Condition
 - 4.1.3.3 Evaluation of Project versus 0.3° C Temperature Increase Related to Natural Conditions
 - 4.1.4 Possible Effects of Climate Change on Water Temperature

- 4.2 pH
- 4.3 Chemical Oxygen Demand
- 4.4 Oil and Grease
- 4.5 Suspended Solids
- 5.0 PREVIOUS STUDIES AND COMPLETED MODELING
 - 5.1 Lower Snake River Juvenile Fish Migration Feasibility Study
 - 5.2 Long-term, One-dimensional Simulation of Lower Snake River Temperatures for Current and Un-impounded Conditions
 - 5.3 Predicting Effects of Dworshak Cold-Water Releases on Lower Snake River Temperatures Using CEQUAL-W2
 - 5.4 Columbia River System Operations Alternatives Analysis
 - 5.5 EPA Temperature TMDL
 - 5.5.1 Project Waste Load Allocation and Discussion of Compliance
 - 5.5.2 Project Load Allocation and Discussion of Compliance.
 - 5.6 Summary Comparison of Studies and Modeling
- 6.0 ATTAINMENT STRATEGIES/MEASURES FOR CORPS' EFFECTS TO WATER QUALITY
 - 6.1 Current Measures/Strategies
 - 6.1.1 Point Sources
 - 6.1.1.1 Current Practices for Preventing Discharges of Oil and Grease, pH, Chemical Oxygen Demand and Suspended Solids at the Project
 - 6.1.1.2 Changes to Dam Operations that have Already Been Implemented
 - 6.1.2 Non-Point Sources
 - 6.1.2.1 Cold-Water Summer Releases from Dworshak Reservoir
 - 6.2 Future Measures/Strategies
 - 6.2.1 Analytical Methods that will be Used to Evaluate all Reasonable and Feasible Improvements that Could be used to Meet the Standard
 - 6.2.2 Point Sources
 - 6.2.2.1 Future Practices That May be Implemented for Preventing Discharges of Oil and Grease, pH, Chemical Oxygen Demand and Suspended Solids at the Project if Necessary Following Results of the Monitoring Program
 - 6.2.2.2 Discharging Additional Water Through Turbines Instead of Spillways
 - 6.2.2.3 Additional Evaluation of Fish Ladder Operation
 - 6.2.3 Non-Point Sources
 - 6.2.3.1 Investigate Alternative Dworshak Reservoir Release Scenarios for Ice Harbor Project Temperature Management
 - 6.2.3.2 Deeper Drafting of Dworshak Reservoir for Summer Cold-Water Releases
 - 6.2.3.3 Operate Lake Sacajawea Below MOP
 - 6.2.3.4 Existing Cold-Water Refuge Evaluation
 - 6.2.4 Summary of Evaluations
 - 6.2.4.1 Identify if Standard is Attainable, and if not, Estimate the Highest Level of Improvement that can Reasonably be Attained
- 7.0 WATER QUALITY MONITORING FOR NPDES PERMIT
 - 7.1 Project and Reservoir Temperature Monitoring
 - 7.2 Project and Forebay pH Monitoring
 - 7.3 Project Monitoring for COD, Oil and Grease, and Suspended Solids

8.0 BENCHMARKS AND REPORTING

8.1 Benchmark Evaluation and Discussion

8.1.1 Translation of Water Load and Load Allocation into Measurable Benchmarks

8.2 Compliance Schedule

8.3 Annual Attainment Measure Implementation Reports

9.0 REFERENCES

DRAFT

WATER QUALITY ATTAINMENT PLAN TABLE OF CONTENTS FOR LITTLE GOOSE PROJECT

1.0 INTRODUCTION

- 1.1 NPDES Permit Requirements
- 1.2 Scope of Water Quality Attainment Plan

2.0 PROJECT AUTHORITIES, DESCRIPTION, AND OPERATION

- 2.1 Authorities
 - 2.1.1 Rivers and Harbors Acts of 1944 and 1945 (PL 79-14)
 - 2.1.2 Flood Control Act of 1962
 - 2.1.3 Fish and Wildlife Coordination Act (PL 85-624)
 - 2.1.4 Water Resources Development Act of 1976 (PL 94-587)
- 2.2 Project Description
 - 2.2.1 Project Location
 - 2.2.2 Project Authorized Purposes
 - 2.2.3 Physical Components
- 2.3 Basin Description
 - 2.3.1 Climate
 - 2.3.2 Runoff Characteristics
- 2.4 Operation
 - 2.4.1 Flood Control
 - 2.4.2 Navigation
 - 2.4.3 Power Plan
 - 2.4.4 Fish Passage

3.0 WATER QUALITY STANDARDS, DESIGNATED USES, AND NUMERIC CRITERIA

- 3.1 Clean Water Act (P.L. 92-500) (33 U.S.C. §1251 et seq.)
- 3.2 Temperature
- 3.3 pH
- 3.4 Chemical Oxygen Demand, Oil and Grease, Suspended Solids

4.0 HISTORICAL, EXISTING, AND FUTURE CONDITIONS

- 4.1 Temperature
 - 4.1.1 Historic Water Temperatures
 - 4.1.1.1 Monitoring and Data Analysis
 - 4.1.1.2 Historic Water Temperature Modeling Results
 - 4.1.2 Existing Conditions Compared to Water Quality Standard
 - 4.1.2.1 Inflowing Temperature Compared to Outflow
 - 4.1.2.2 Calculation of the Change in Temperature from Upstream to Downstream
 - 4.1.3 Natural Condition Temperature Estimate
 - 4.1.3.1 Methodology
 - 4.1.3.2 Evaluation of Current versus Natural Condition
 - 4.1.3.3 Evaluation of Project versus 0.3° C Temperature Increase Related to Natural Conditions
 - 4.1.4 Possible Effects of Climate Change on Water Temperature

- 4.2 pH
- 4.3 Chemical Oxygen Demand
- 4.4 Oil and Grease
- 4.5 Suspended Solids

5.0 PREVIOUS STUDIES AND COMPLETED MODELING

- 5.1 Lower Snake River Juvenile Fish Migration Feasibility Study
- 5.2 Long-term, One-dimensional Simulation of Lower Snake River Temperatures for Current and Un-impounded Conditions
- 5.3 Predicting Effects of Dworshak Cold-Water Releases on Lower Snake River Temperatures Using CEQUAL-W2
- 5.4 Columbia River System Operations Alternatives Analysis
- 5.5 EPA Temperature TMDL
 - 5.5.1 Project Waste Load Allocation and Discussion of Compliance
 - 5.5.2 Project Load Allocation and Discussion of Compliance.
- 5.6 Summary Comparison of Studies and Modeling

6.0 ATTAINMENT STRATEGIES/MEASURES FOR CORPS' EFFECTS TO WATER QUALITY

- 6.1 Current Measures/Strategies
 - 6.1.1 Point Sources
 - 6.1.1.1 Current Practices for Preventing Discharges of Oil and Grease, pH, Chemical Oxygen Demand and Suspended Solids at the Project
 - 6.1.1.2 Changes to Dam Operations that have Already Been Implemented
 - 6.1.2 Non-Point Sources
 - 6.1.2.1 Cold-Water Summer Releases from Dworshak Reservoir
 - 6.1.2.2 Pumping Water From the Bottom of the Reservoir Into Fish Ladders
- 6.2 Future Measures/Strategies
 - 6.2.1 Analytical Methods that will be Used to Evaluate all Reasonable and Feasible Improvements that Could be used to Meet the Standard
 - 6.2.2 Point Sources
 - 6.2.2.1 Future Practices That May be Implemented for Preventing Discharges of Oil and Grease, pH, Chemical Oxygen Demand and Suspended Solids at the Project if Necessary Following Results of the Monitoring Program
 - 6.2.2.2 Discharging Additional Water Through Turbines Instead of Spillways
 - 6.2.2.3 Additional Evaluation of Fish Ladder Operation
 - 6.2.3 Non-Point Sources
 - 6.2.3.1 Investigate Alternative Dworshak Reservoir Release Scenarios for Little Goose Project Temperature Management
 - 6.2.3.2 Deeper Drafting of Dworshak Reservoir for Summer Cold-Water Releases
 - 6.2.3.3 Operate Lake Bryan Below MOP
 - 6.2.3.4 Existing Cold-Water Refuge Evaluation
 - 6.2.4 Summary of Evaluations
 - 6.2.4.1 Identify if Standard is Attainable, and if not, Estimate the Highest Level of Improvement that can Reasonably be Attained

7.0 WATER QUALITY MONITORING FOR NPDES PERMIT

- 7.1 Project and Reservoir Temperature Monitoring
- 7.2 Project and Forebay pH Monitoring
- 7.3 Project Monitoring for COD, Oil and Grease, and Suspended Solids

8.0 BENCHMARKS AND REPORTING

8.1 Benchmark Evaluation and Discussion

- 8.1.1 Translation of Water Load and Load Allocation into Measurable Benchmarks
- 8.2 Compliance Schedule
- 8.3 Annual Attainment Measure Implementation Reports

9.0 REFERENCES

DRAFT

**WATER QUALITY ATTAINMENT PLAN TABLE OF CONTENTS FOR
LOWER MONUMENTAL PROJECT, PERMIT No.: WA0026808**

1.0 INTRODUCTION

- 1.1 NPDES Permit Requirements
- 1.2 Scope of Water Quality Attainment Plan

2.0 PROJECT AUTHORITIES, DESCRIPTION, AND OPERATION

- 2.1 Authorities
 - 2.1.1 Rivers and Harbors Acts of 1944 and 1945 (PL 79-14)
 - 2.1.2 Flood Control Act of 1962
 - 2.1.3 Fish and Wildlife Coordination Act (PL 85-624)
 - 2.1.4 Water Resources Development Act of 1976 (PL 94-587)
- 2.2 Project Description
 - 2.2.1 Project Location
 - 2.2.2 Project Authorized Purposes
 - 2.2.3 Physical Components
- 2.3 Basin Description
 - 2.3.1 Climate
 - 2.3.2 Runoff Characteristics
- 2.4 Operation
 - 2.4.1 Flood Control
 - 2.4.2 Navigation
 - 2.4.3 Power Plan
 - 2.4.4 Fish Passage

3.0 WATER QUALITY STANDARDS, DESIGNATED USES, AND NUMERIC CRITERIA

- 3.1 Clean Water Act (P.L. 92-500) (33 U.S.C. §1251 et seq.)
- 3.2 Temperature
- 3.3 pH
- 3.4 Chemical Oxygen Demand, Oil and Grease, Suspended Solids

4.0 HISTORICAL, EXISTING, AND FUTURE CONDITIONS

- 4.1 Temperature
 - 4.1.1 Historic Water Temperatures
 - 4.1.1.1 Monitoring and Data Analysis
 - 4.1.1.2 Historic Water Temperature Modeling Results
 - 4.1.2 Existing Conditions Compared to Water Quality Standard
 - 4.1.2.1 Inflowing Temperature Compared to Outflow
 - 4.1.2.2 Calculation of the Change in Temperature from Upstream to Downstream
 - 4.1.3 Natural Condition Temperature Estimate
 - 4.1.3.1 Methodology
 - 4.1.3.2 Evaluation of Current versus Natural Condition
 - 4.1.3.3 Evaluation of Project versus 0.3° C Temperature Increase Related to Natural Conditions
 - 4.1.4 Possible Effects of Climate Change on Water Temperature

- 4.2 pH
- 4.3 Chemical Oxygen Demand
- 4.4 Oil and Grease
- 4.5 Suspended Solids
- 5.0 PREVIOUS STUDIES AND COMPLETED MODELING
 - 5.1 Lower Snake River Juvenile Fish Migration Feasibility Study
 - 5.2 Long-term, One-dimensional Simulation of Lower Snake River Temperatures for Current and Un-impounded Conditions
 - 5.3 Predicting Effects of Dworshak Cold-Water Releases on Lower Snake River Temperatures Using CEQUAL-W2
 - 5.4 Columbia River System Operations Alternatives Analysis
 - 5.5 EPA Temperature TMDL
 - 5.5.1 Project Waste Load Allocation and Discussion of Compliance
 - 5.5.2 Project Load Allocation and Discussion of Compliance.
 - 5.6 Summary Comparison of Studies and Modeling
- 6.0 ATTAINMENT STRATEGIES/MEASURES FOR CORPS' EFFECTS TO WATER QUALITY
 - 6.1 Current Measures/Strategies
 - 6.1.1 Point Sources
 - 6.1.1.1 Current Practices for Preventing Discharges of Oil and Grease, pH, Chemical Oxygen Demand and Suspended Solids at the Project
 - 6.1.1.2 Changes to Dam Operations that have Already Been Implemented
 - 6.1.2 Non-Point Sources
 - 6.1.2.1 Cold-Water Summer Releases from Dworshak Reservoir
 - 6.2 Future Measures/Strategies
 - 6.2.1 Analytical Methods that will be Used to Evaluate all Reasonable and Feasible Improvements that Could be used to Meet the Standard
 - 6.2.2 Point Sources
 - 6.2.2.1 Future Practices That May be Implemented for Preventing Discharges of Oil and Grease, pH, Chemical Oxygen Demand and Suspended Solids at the Project if Necessary Following Results of the Monitoring Program
 - 6.2.2.2 Discharging Additional Water Through Turbines Instead of Spillways
 - 6.2.2.3 Additional Evaluation of Fish Ladder Operation
 - 6.2.3 Non-Point Sources
 - 6.2.3.1 Investigate Alternative Dworshak Reservoir Release Scenarios for Lower Monumental Project Temperature Management
 - 6.2.3.2 Deeper Drafting of Dworshak Reservoir for Summer Cold-Water Releases
 - 6.2.3.3 Operate Lake Herbert G. West Below MOP
 - 6.2.3.4 Existing Cold-Water Refuge Evaluation
 - 6.2.4 Summary of Evaluations
 - 6.2.4.1 Identify if Standard is Attainable, and if not, Estimate the Highest Level of Improvement that can Reasonably be Attained
- 7.0 WATER QUALITY MONITORING FOR NPDES PERMIT
 - 7.1 Project and Reservoir Temperature Monitoring
 - 7.2 Project and Forebay pH Monitoring
 - 7.3 Project Monitoring for COD, Oil and Grease, and Suspended Solids

8.0 BENCHMARKS AND REPORTING

8.1 Benchmark Evaluation and Discussion

8.1.1 Translation of Water Load and Load Allocation into Measurable Benchmarks

8.2 Compliance Schedule

8.3 Annual Attainment Measure Implementation Reports

9.0 REFERENCES

DRAFT

**WATER QUALITY ATTAINMENT PLAN TABLE OF CONTENTS FOR
LOWER GRANITE PROJECT, Permit No.: WA0026794**

1.0 INTRODUCTION

- 1.1 NPDES Permit Requirements
- 1.2 Scope of Water Quality Attainment Plan

2.0 PROJECT AUTHORITIES, DESCRIPTION, AND OPERATION

- 2.1 Authorities
 - 2.1.1 Rivers and Harbors Acts of 1944 and 1945 (PL 79-14)
 - 2.1.2 Flood Control Act of 1962
 - 2.1.3 Fish and Wildlife Coordination Act (PL 85-624)
 - 2.1.4 Water Resources Development Act of 1976 (PL 94-587)
- 2.2 Project Description
 - 2.2.1 Project Location
 - 2.2.2 Project Authorized Purposes
 - 2.2.3 Physical Components
- 2.3 Basin Description
 - 2.3.1 Climate
 - 2.3.2 Runoff Characteristics
- 2.4 Operation
 - 2.4.1 Flood Control
 - 2.4.2 Navigation
 - 2.4.3 Power Plan
 - 2.4.4 Fish Passage

3.0 WATER QUALITY STANDARDS, DESIGNATED USES, AND NUMERIC CRITERIA

- 3.1 Clean Water Act (P.L. 92-500) (33 U.S.C. §1251 et seq.)
- 3.2 Temperature
- 3.3 pH
- 3.4 Chemical Oxygen Demand, Oil and Grease, Suspended Solids

4.0 HISTORICAL, EXISTING, AND FUTURE CONDITIONS

- 4.1 Temperature
 - 4.1.1 Historic Water Temperatures
 - 4.1.1.1 Monitoring and Data Analysis
 - 4.1.1.2 Historic Water Temperature Modeling Results
 - 4.1.2 Existing Conditions Compared to Water Quality Standard
 - 4.1.2.1 Inflowing Temperature Compared to Outflow
 - 4.1.2.2 Calculation of the Change in Temperature from Upstream to Downstream
 - 4.1.3 Natural Condition Temperature Estimate
 - 4.1.3.1 Methodology
 - 4.1.3.2 Evaluation of Current versus Natural Condition
 - 4.1.3.3 Evaluation of Project versus 0.3° C Temperature Increase Related to Natural Conditions
 - 4.1.4 Possible Effects of Climate Change on Water Temperature

- 4.2 pH
- 4.3 Chemical Oxygen Demand
- 4.4 Oil and Grease
- 4.5 Suspended Solids
- 5.0 PREVIOUS STUDIES AND COMPLETED MODELING
 - 5.1 Lower Snake River Juvenile Fish Migration Feasibility Study
 - 5.2 Long-term, One-dimensional Simulation of Lower Snake River Temperatures for Current and Un-impounded Conditions
 - 5.3 Predicting Effects of Dworshak Cold-Water Releases on Lower Snake River Temperatures Using CEQUAL-W2
 - 5.4 Columbia River System Operations Alternatives Analysis
 - 5.5 EPA Temperature TMDL
 - 5.5.1 Project Waste Load Allocation and Discussion of Compliance
 - 5.5.2 Project Load Allocation and Discussion of Compliance.
 - 5.6 Summary Comparison of Studies and Modeling
- 6.0 ATTAINMENT STRATEGIES/MEASURES FOR CORPS' EFFECTS TO WATER QUALITY
 - 6.1 Current Measures/Strategies
 - 6.1.1 Point Sources
 - 6.1.1.1 Current Practices for Preventing Discharges of Oil and Grease, pH, Chemical Oxygen Demand and Suspended Solids at the Project
 - 6.1.1.2 Changes to Dam Operations that have Already Been Implemented
 - 6.1.2 Non-Point Sources
 - 6.1.2.1 Cold-Water Summer Releases from Dworshak Reservoir
 - 6.1.2.2 Pumping Water From the Bottom of the Reservoir Into Fish Ladders
 - 6.2 Future Measures/Strategies
 - 6.2.1 Analytical Methods that will be Used to Evaluate all Reasonable and Feasible Improvements that Could be used to Meet the Standard
 - 6.2.2 Point Sources
 - 6.2.2.1 Future Practices That May be Implemented for Preventing Discharges of Oil and Grease, pH, Chemical Oxygen Demand and Suspended Solids at the Project if Necessary Following Results of the Monitoring Program
 - 6.2.2.2 Discharging Additional Water Through Turbines Instead of Spillways
 - 6.2.2.3 Additional Evaluation of Fish Ladder Operation
 - 6.2.3 Non-Point Sources
 - 6.2.3.1 Investigate Alternative Dworshak Reservoir Release Scenarios for Lower Granite Project Temperature Management
 - 6.2.3.2 Deeper Drafting of Dworshak Reservoir for Summer Cold-Water Releases
 - 6.2.3.3 Operate Lower Granite Reservoir Below MOP
 - 6.2.3.4 Existing Cold-Water Refuge Evaluation
 - 6.2.4 Summary of Evaluations
 - 6.2.4.1 Identify if Standard is Attainable, and if not, Estimate the Highest Level of Improvement that can Reasonably be Attained
- 7.0 WATER QUALITY MONITORING FOR NPDES PERMIT
 - 7.1 Project and Reservoir Temperature Monitoring
 - 7.2 Project and Forebay pH Monitoring
 - 7.3 Project Monitoring for COD, Oil and Grease, and Suspended Solids

8.0 BENCHMARKS AND REPORTING

8.1 Benchmark Evaluation and Discussion

8.1.1 Translation of Water Load and Load Allocation into Measurable Benchmarks

8.2 Compliance Schedule

8.3 Annual Attainment Measure Implementation Reports

9.0 REFERENCES

DRAFT

Ecology Guidance for Preparing a Dam Compliance Schedule Request and Water Quality Attainment Plan

March 2023

This Washington Department of Ecology (Ecology) guidance presents a recommended series of actions for dam owners to pursue to achieve an approvable Water Quality Attainment Plan (WQAP) and compliance schedule in accordance with WAC 173-201A-510(5). Dam owners are encouraged to begin preparations for a WQAP submittal at a minimum one year prior to the due date. As an example, a dam owner may begin working through the guidance actions during the final year(s) of a dam compliance schedule to ensure a new schedule and WQAP is approved by Ecology and begins immediately thereafter. We suggest dam owners consult with Ecology early and often during the recommended guidance process.

The following actions outline a strategy for dam owners to choose reasonable and feasible implementation projects to meet water quality standards, engage key stakeholders, and develop an approvable WQAP:

1. Assemble a WQAP project team with pertinent personnel (e.g., consultants, in-house engineering personnel, etc.) to consider projects for evaluation and implementation as part of the WQAP. The assembled team will review and/or modify past project alternatives and propose new projects in preparation of an extensive list of potential improvement actions. For all potential projects, water quality improvements may include any one or combination of the following factors to achieve compliance:
 - Magnitude
 - Duration
 - FrequencyIncremental improvement made to any of these factors must be considered to achieve the highest attainable water quality condition if numeric criteria cannot be met.
2. Develop or revise evaluation criteria for ranking and prioritizing projects that are considered reasonable and feasible to achieve the maximum water quality condition. Submit the developed evaluation criteria to Ecology for review and comment.
3. Finalize the criteria and prepare a preliminary list of potential projects from the original extensive list to begin outlining the WQAP. The list of prioritized projects could be informed by the criteria, preliminary modelling, and existing science on water quality improvement strategies, as appropriate.
4. Once the reasonable and feasible list of actions is prepared, the dam owner should hold a series of advisory workshops (see No. 5) to vet actions, decisions, and assumptions made developing the list and evaluation criteria.
5. Form an advisory group including the WQAP project team, regulatory agencies, tribes, and experts in water resources specific to reservoir management, design, and function. Engage the advisory group in a series of workshops facilitated by the dam owner to include the following content:
 - Introduce the general project background and need for water quality attainment of WA water quality standards, past project proposals, evaluation criteria, and the developed reasonable and feasible list of actions and how each measure was evaluated using the criteria.

- Based on the information presented, the dam owner will request from the group any additional implementation projects and alternatives. This may include supplementary water quality studies or data collection needs to support project evaluation and implementation proposals.
6. Following the series of workshops, a final evaluation criteria and vetted project list would be integrated into a draft WQAP for Ecology review and comment. At a minimum, the draft must include all parts of WAC 173-201A-510(5)(b) and the developed evaluation criteria as an attachment.
 7. Once having addressed Ecology’s comments, we recommend the dam owner present the WQAP to the advisory workgroup and/or broader group of stakeholders for final review. The dam owner should consider recommendations from this review and finalize for Ecology approval and subsequent submittal to the appropriate federal agency.

Ecology Proposed WQAP Submittal Schedule

The following table may be revised based on project scope and conversations between Ecology and the dam owner. Ecology recommends dam owners work with the agency to agree on a schedule incorporating each of the defined tasks to ensure the final WQAP submittal due date is met.

Task No.	Task	Time Required (days)	Notes
1 & 2	Assemble Project team, create comprehensive list of project ideas, and develop evaluation criteria	60	Dam owner schedules advisory meetings ~100 days out
2	Ecology review and comment of evaluation criteria	20	
3	Dam owner addresses Ecology comments and finalizes evaluation criteria	20	
4 & 5	Dam owner prioritizes projects using criteria and presents project proposals to advisory workgroup	10	Approximately three workshops facilitated over 10-day period. Dam owner schedules final advisory group meeting ~100 days out during last workshop.
6a	Dam owner updates project list and develops draft WQAP for Ecology review and comment	45	
6b	Ecology review and comment of draft WQAP	30	
7a	Dam owner addresses Ecology comments and presents to advisory group	30	
7b	Dam owner makes final changes to WQAP based on meeting presentation and submits to Ecology for final approval	10	
7c	Ecology approves WQAP and dam owner submits to the federal agency	10	
Total		235 or ~8 months	