## B.2.1 Ecological Flow Standards

***Required regardless of standard selected***:

1. Identify any deviations that have occurred in the past 10 years; if none have occurred, state so. If deviations have occurred, identify the date, duration, cause, and the measures taken to minimize reoccurrence. Links to FERC notifications and responses should be included.
2. Identify how flows and water levels are monitored and explain how compliance with requirements is demonstrated.
3. Describe any enforceable agreements with upstream or downstream facilities that regulate inflow or outflow at the facility (see Section 4.1.1 as these “regulated reaches” may need to be designated as separate Zones of Effect).

Table 3. Ecological Flows Standards

(select one standard, and PLUS if requested for each ZoE).

| ***Criterion*** | ***Standard***  | ***Instructions*** |
| --- | --- | --- |
| A | 1 | Not Applicable / De Minimis Effect:* Confirm the location of the powerhouse relative to any dam/diversion structures and demonstrate that there are no bypassed reaches in the designated Zone of Effect.
* For run-of-river facilities, provide details on operations and describe how flows, water levels, and operations are monitored to ensure such an operational mode is maintained. In a conduit facility, identify the source waters, location of discharge points, and receiving waters for the conduit system within which the hydropower facility is located. This standard cannot be used for conduits that discharge to a natural waterbody.
* For impoundment zones, explain water management (e.g., fluctuations, ramping, refill rates, restrictions) and how those requirements support fish and wildlife habitat within the ZoE.
 |
| A | 2 | Agency Recommendation (see Appendix A for definition):* Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective).
* Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement.
* Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife.
* Explain how the recommendation provides fish and wildlife protection, mitigation, and enhancement (including instream flows, ramping, and peaking rate conditions, and seasonal and episodic instream flow variations).
 |
| A | 3 | Limited Storage:* Explain the calculation of active storage capacity and retention time (storage/flow), including data sources.
* Provide the name and published reference for the methodology used, including developer of the methodology and several successful, recent applications, and how it has been regionally accepted.
* Provide the calculations used to derive the final flow, including data sources and any pre-processing applied.
 |
| A | 4 | Site-Specific Studies:* Describe the site-specific, habitat evaluation technique that was used to define the ecological flow regime and how the results satisfy the goal of this criterion.
* Describe the resultant flow regime in terms of base flow, seasonal variability, high-flow events, short-term rates of change, and year-to-year variability.
* Describe the target fish and wildlife resources that were considered and how the resultant flow regime supports their habitat over their life cycles.
 |
| A | PLUS | Bonus Activities:* If an adaptive management program is in place, provide sufficient information to describe the program, the current status of implementation and consultation, and how it is expected to achieve the desired results; or
* If non-flow habitat enhancements have been implemented, explain what they are, how their benefits are being monitored, and how they are achieving a positive net benefit to fish and wildlife resources.
 |

## B.2.2 Water Quality Standards

***Required regardless of standard selected***:

1. Specify the state's water quality classification and designated uses for the river at the facility or for each zone if they differ. For instance, "*The impoundment is a Class B water designated as a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation*".
2. Provide a link to the state’s most recent final Clean Water Act Section 303(d) impaired waters list, the Section 305(b) integrated water quality report; and lists of other stressed waters (if applicable) and indicate the page(s) therein that apply to facility waters or state that the facility waters are not included on any list.

Table 4. Water Quality Standards

(select one standard, and PLUS if requested for each ZoE).

| ***Criterion*** | ***Standard***  | ***Instructions*** |
| --- | --- | --- |
| B | 1 | Not Applicable / De Minimis Effect:* Explain the rationale for why the facility does not alter water quality characteristics below, around, and above the facility.
 |
| B | 2 | Agency Recommendation:* Provide a copy of the most recent Water Quality Certificate and any subsequent amendments, including the date(s) of issuance. If more than 10 years old, provide documentation that the certification terms and conditions remain valid and in effect for the facility (e.g., a letter or email from the agency).
* Identify any other agency recommendations related to water quality and explain their scientific or technical basis.
* Describe all compliance activities related to water quality and any agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.
 |
| B | 3 | Site-Specific Studies:* Document consultation with the appropriate water quality agency to determine what water quality parameters and sampling methods are required.
* Present recent water quality data from the facility or from other sources in the vicinity of the facility (e.g., data collected from the state, watershed associations, or others who collect data under generally accepted sampling protocols and quality assurance procedures) and explain and demonstrate how it satisfies current applicable water quality standards including designated uses or provide a letter from the appropriate state or other regulatory agency accepting the data.
 |
| B | PLUS | Bonus Activities:* Describe any advanced technologies or methods that have been deployed at the facility to enhance ambient water quality and how its performance is being monitored; or
* If adaptive management is being implemented, describe the management objectives, the monitoring program in place to evaluate performance against those objectives, and the management actions that will be taken in response to monitoring results.
 |

## B.2.3 Upstream Fish Passage Standards

***Required regardless of standard selected***:

1. Provide a list all migratory fish species (anadromous, catadromous, and potamodromous species) that occur now or have occurred historically at the facility.

Table 5. Upstream Fish Passage Standards

(select one standard, and PLUS if requested for each ZoE).

| ***Criterion*** | ***Standard***  | ***Instructions*** |
| --- | --- | --- |
| C | 1 | Not Applicable / De Minimis Effect:* Explain why the facility does not impose a barrier to upstream fish passage in the designated ZoE. Typically, impoundment zones will qualify for this standard since once above a dam and in an impoundment, there is no additional facility barrier to further upstream movement.
* Document available fish distribution data and the lack of migratory fish species in the ZoE.
* If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.
 |
| C | 2 | Agency Recommendation:* Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective).
* Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement.
* Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.
* Provide evidence that required passage facilities are being operated and maintained as mandated (e.g., meets seasonal operational requirements, coordination with agencies, effectiveness relative to performance targets).
 |
| C | 3 | Best Practice / Best Available Technology:* Describe the upstream fish passage practices or technologies that have been deployed and are in operation and justify why they qualify as best practices or best available technology.
* Identify the migratory fish species in the area and explain how the upstream fish passage facilities provide adequate and safe passage for them.
* Describe the monitoring and effectiveness activities that have been or are being conducted for the upstream passage facilities.
 |
| C | 4 | Acceptable Mitigation:* Describe the alternative mitigation measures being deployed in lieu of upstream fishways and provide documentation of agency approval of them.
* Explain how the total benefits of the mitigation provided equals or exceeds the benefits that might accrue from providing upstream passage in terms of reproductive success (e.g., numbers of fish produced, or area of suitable habitat provided).
* Explain how the alternative mitigation measures sustain the abundance and diversity of fish stocks in the river system.
 |
| C | PLUS | Bonus Activities:* If advanced technology has been or will be deployed, explain how it will increase fish passage success relative to other options; or
* If a basin-scale redevelopment strategy is being pursued, explain how it will increase the abundance and sustainability of migratory fish species in the river system; or
* If adaptive management is being implemented, describe the management objectives, the monitoring program to evaluate performance against those objectives, and the management actions that will be taken in response to monitoring results.
 |

## B.2.4 Downstream Fish Passage and Protection Standards

***Required regardless of standard selected***:

1. In addition to the migratory species list provided for criterion C above, provide a list of all riverine/resident fish species that occur now or have occurred historically at the facility.

Table 6. Downstream Fish Passage Standards

(select one standard, and PLUS if requested for each ZoE).

| ***Criterion*** | ***Standard***  | ***Instructions*** |
| --- | --- | --- |
| D | 1 | Not Applicable / De Minimis Effect:* Explain why the facility does not impose a barrier to downstream fish passage in the designated ZoE, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines). Typically, tailwater/downstream zones will qualify for this standard since below a dam and powerhouse there is no additional facility barrier to further downstream movement. Bypassed reach zones must demonstrate that flows in the reach are adequate to support safe, effective, and timely downstream migration.
* For riverine fish populations that are known to move downstream, explain why the facility in the designated ZoE does not contribute adversely to the species populations or to their access to habitat necessary for successful completion of their life cycles; or
* Document available fish distribution data and the lack of fish species requiring passage in the ZoE; or
* If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.
 |
| D | 2 | Agency Recommendation:* Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective).
* Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not.
* Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.
* Provide evidence that required passage facilities are being operated and maintained as mandated (e.g., meets seasonal operational requirements, coordination with agencies, effectiveness relative to performance targets).
 |
| D | 3 | Best Practice / Best Available Technology:* Describe the downstream fish passage practices or technologies that have been deployed and are in operation and justify why they qualify as best practices or best available technology.
* Explain how the downstream fish passage facilities provide adequate and safe passage for fish species that are present and require passage.
* Describe the monitoring and effectiveness activities that have been or are being conducted for the downstream passage facilities.
 |
| D | 4 | Acceptable Mitigation:* Describe the alternative mitigation measures being deployed in lieu of downstream fish passage and/or protection strategies and provide documentation of agency approval of the measures.
* Explain how the total benefits of the mitigation strategy equals or exceeds the benefits that might accrue from providing downstream passage in terms of reproductive success (e.g., numbers of fish produced, or area of suitable habitat provided).
* Explain how the alternative mitigation measures sustain the abundance and diversity of fish stocks in the river system.
 |
| D | PLUS | Bonus Activities:* If advanced technology has been or will be deployed, explain how it will increase fish passage success relative to other options; or
* If a basin-scale redevelopment strategy is being pursued, explain how it will increase the abundance and sustainability of migratory fish species in the river system; or
* If adaptive management is being implemented describe the management objectives, the monitoring program to evaluate performance against those objectives, and the management actions that will be taken in response to monitoring results.
 |

## B.2.5 Shoreline and Watershed Protection Standards

***Required regardless of standard selected*:**

1. Describe land use and land cover around the facility. Describe any protections afforded the river or lands around the facility (e.g., Wild and Scenic River, conservation lands surrounding the impoundment: state or local regulatory restrictions: critical or core habitats for sensitive species, etc.)

Table 7. Shoreline and Watershed Protection Standards

(select one standard, and PLUS if requested for each ZoE).

| ***Criterion*** | ***Standard***  | ***Instructions*** |
| --- | --- | --- |
| E | 1 | Not Applicable / De Minimis Effect:* If there are no lands with significant ecological value associated with the designated ZoE, document and justify this (e.g., describe the land use and land cover within the FERC project or facility boundary, and absence of critical habitat for protected species).
* Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.
 |
| E | 2 | Agency Recommendation:* Provide copies or links to any agency recommendations or management plans that are in effect related to protection, mitigation, or enhancement of shoreline surrounding the facility in the designated ZoE (e.g., Shoreline Management Plans).
* Provide documentation that the facility is in full compliance with applicable agency recommendations or management plans.
 |
| E | 3 | Enforceable Protection:* Demonstrate that there is an approved and enforceable shoreline buffer or equivalent watershed protection plan (including state or local regulations) in place for conservation purposes, including buffered shoreline along river corridors; or
* In lieu of an existing shore land protection plan, provide documentation that the facility has protected or commits to protect and not develop an equivalent land area for conservation purposes as a condition of LIHI Certification, with such commitment to be in effect for the duration of LIHI Certification.
 |
| E | PLUS | Bonus Activities:* Provide documentation that the facility has a formal site-specific conservation plan protecting a buffer zone of 50% or more of the undeveloped shoreline; or
* In lieu of a formal conservation plan, provide documentation that the facility has established a watershed enhancement fund for ecological land management that will achieve the equivalent land protection value of an ecologically effective buffer zone of 50% or more around the undeveloped shorelines.
 |

## B.2.6 Threatened and Endangered Species Standards

***Required regardless of standard selected*:**

1. Identify all federal and state listed species (fish, aquatic plants and organisms, and terrestrial plants and wildlife) in the facility area based on current data. Avoid using privileged locational information or provide that information in a separate confidential attachment.

Table 8. Threatened and Endangered Species Standards

(select one standard, and PLUS if requested for each ZoE).

| ***Criterion*** | ***Standard***  | ***Instructions*** |
| --- | --- | --- |
| F | 1 | Not Applicable / De Minimis Effect:* Document that there are no listed species in the designated ZoE; or
* If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species.
* If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken.
 |
| F | 2 | Finding of No Negative Effects:* Identify all federal and state listed species that are or may be in the immediate area of the designated ZoE based on current data from the appropriate state and federal natural resource management agencies.
* Provide documentation that there is no demonstrable negative effect of the facility on any listed species in the area from an appropriate natural resource management agency; or provide documentation that habitat for the species does not exist within the designated ZoE or is not impacted by facility operations.
 |
| F | 3 | Recovery Planning and Action:* If listed species are present, document that the facility is in compliance with relevant conditions in the species recovery plans, incidental take permits or statements, biological opinions, habitat conservation plans, or similar government documents.
* Document that any incidental take permits and/or biological opinions currently in effect were designed as long-term solutions for protection of listed species in the facility area.
 |
| F | 4 | Acceptable Mitigation:* If newly listed species are present for which environmental requirements have not been fully determined, describe any significant measures that the facility is implementing to avoid or minimize the impacts on such newly listed species.
* Document that the mitigation measures for newly listed species are being implemented to the interim satisfaction of applicable resource agencies.
 |
| F | PLUS | Bonus Activities:* Describe any enforceable agreement that the facility has with resource agencies to operate the facility in support of rare species or endemic species; or
* Describe any enforceable agreement that the facility has with resource agencies to take proactive measures in the vicinity of the facility to substantially minimize impacts on species that are at risk of becoming listed species; or
* Describe any enforceable agreement that the facility has with resource agencies to be a significant participant in a species recovery effort.
 |

## B.2.7 Cultural and Historic Resources Standards

***Required regardless of standard selected***:

1. Identify the cultural and historic resources present on facility-owned property or that may be affected by facility operations. Avoid using privileged locational information or provide that information in a separate confidential attachment.

Table 9. Cultural and Historic Resources Standards

(select one standard, and PLUS if requested for each ZoE).

| ***Criterion*** | ***Standard***  | ***Instructions*** |
| --- | --- | --- |
| G | 1 | Not Applicable / De Minimis Effect:* Document that there are no cultural or historic resources located on facility lands associated with the designated ZoE that can be affected by construction or operations of the facility; or
* Document that the facility construction and operation have not in the past, nor currently adversely affect any cultural or historic resources that are present on facility lands in the designated ZoE; and
* Provide a letter from the state and tribal (if applicable) historic preservation office that confirms no effect (this may be newly obtained or issued during prior FERC licensing or exemption proceedings).
 |
| G | 2 | Approved Plan:* Provide documentation of all approved state, federal, and recognized tribal plans for the protection, enhancement, and mitigation of impacts to cultural and historic resources affected by the facility.
* Document that the facility is in compliance with all such plans.
 |
| G | PLUS | Bonus Activities:* Document any substantial commitment that the facility has made to restoring one or more significant cultural or historical resource in the facility vicinity, beyond what is required in existing plans such as a Historic Resources Management Plan; or
* Document any significant new educational opportunity about cultural or historical resources in the area that the facility has created, including contractual obligations that guarantee that this opportunity will exist for the duration of the LIHI Certification.
 |

## B.2.8 Recreational Resources Standards

***Required regardless of standard selected***:

1. Identify and briefly describe all recreational amenities associated with the facility, identify which are owned by the facility, and which not owned or operated by the facility.
2. If there has been a FERC Environmental and Recreation Inspection, please provide a link to or copy of the report and any follow up activities. If there was no inspection, please state that.
3. Provide representative photos of recreational facilities and amenities taken within the last 12 months, and a map showing locations.
4. If applicable, provide a weblink to any public website or describe signage informing the public about the facility’s recreational amenities.

Table 10. Recreational Resources Standards

(select one standard, and PLUS if requested for each ZoE).

| ***Criterion*** | ***Standard***  | ***Instructions*** |
| --- | --- | --- |
| H | 1 | Not Applicable / De Minimis Effect:* Document that the facility does not occupy lands or waters in the designated ZoE to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.
 |
| H | 2 | Agency Recommendation:* Document any resource agency recommendations and any enforceable recreation plan that is in place for recreational access or accommodations.
* Document that the facility in the designated ZoE is in compliance with all such recommendations and plans.
 |
| H | 3 | Assured Accessibility:* In lieu of existing agency recommendations or management plans for recreational uses, document the facility’s current and future commitment to accommodate reasonable requests from recreation interests for adequate public access for recreational use of facility lands and waters, including appropriate recreational water flows and levels, without fees or charges.
 |
| H | PLUS | Bonus Activities:* Document any new public recreational opportunities that have been created on facility lands or waters beyond those required by agencies (e.g., campgrounds, whitewater parks, boating access facilities and trails); and
* Document that such new recreational opportunities did not create unmitigated impacts to other resources.
 |