

as part of the project or connected directly to it;

(B) The normal maximum water surface area and normal maximum water surface elevation (mean sea level), gross storage capacity of any impoundments;

(C) The number, type, and minimum and maximum hydraulic capacity and installed (rated) capacity of any proposed turbines or generators to be included as part of the project;

(D) The number, length, voltage, and interconnections of any primary transmission lines proposed to be included as part of the project, including a single-line diagram showing the transfer of electricity from the project to the transmission grid or point of use; and

(E) An estimate of the dependable capacity, average annual, and average monthly energy production in kilowatt hours (or mechanical equivalent);

(iv) A description of the current (if applicable) and proposed operation of the project, including any daily or seasonal ramping rates, flushing flows, reservoir operations, and flood control operations.

(v) In the case of an existing licensed project;

(A) A complete description of the current license requirements; *i.e.*, the requirements of the original license as amended during the license term;

(B) A summary of project generation and outflow records for the five years preceding filing of the pre-application document;

(C) Current net investment; and

(D) A summary of the compliance history of the project, if applicable, including a description of any recurring situations of non-compliance.

(vi) A description of any new facilities or components to be constructed, plans for future development or rehabilitation of the project, and changes in project operation.

(3) *Description of existing environment and resource impacts.*—(i) *General requirements.* A potential applicant must, based on the existing, relevant, and reasonably available information, include a discussion with respect to each resource that includes:

(A) A description of the existing environment as required by paragraphs (d)(3)(ii)–(xiii) of this section;

(B) Summaries (with references to sources of information or studies) of existing data or studies regarding the resource;

(C) A description of any known or potential adverse impacts and issues associated with the construction, operation or maintenance of the

proposed project, including continuing and cumulative impacts; and

(D) A description of any existing or proposed project facilities or operations, and management activities undertaken for the purpose of protecting, mitigating impacts to, or enhancing resources affected by the project, including a statement of whether such measures are required by the project license, or were undertaken for other reasons. The type and amount of the information included in the discussion must be commensurate with the scope and level of resource impacts caused or potentially caused by the proposed project. Potential license applicants are encouraged to provide photographs or other visual aids, as appropriate, to supplement text, charts, and graphs included in the discussion.

(ii) *Geology and soils.* Descriptions and maps showing the existing geology, topography, and soils of the proposed project and surrounding area. Components of the description must include:

(A) A description of geological features, including bedrock lithology, stratigraphy, structural features, glacial features, unconsolidated deposits, and mineral resources at the project site;

(B) A description of the soils, including the types, occurrence, physical and chemical characteristics, erodability and potential for mass soil movement;

(C) A description of reservoir shorelines and streambanks, including:

(1) Steepness, composition (bedrock and unconsolidated deposits), and vegetative cover; and

(2) Existing erosion, mass soil movement, slumping, or other forms of instability, including identification of project facilities or operations that are known to or may cause these conditions.

(iii) *Water resources.* A description of the water resources of the proposed project and surrounding area. This must address the quantity and quality (chemical/physical parameters) of all waters affected by the project, including but not limited to the project reservoir(s) and tributaries thereto, bypassed reach, and tailrace. Components of the description must include:

(A) Drainage area;

(B) The monthly minimum, mean, and maximum recorded flows in cubic feet per second of the stream or other body of water at the powerplant intake or point of diversion, specifying any adjustments made for evaporation, leakage, minimum flow releases, or other reductions in available flow;

(C) A monthly flow duration curve indicating the period of record and the

location of gauging station(s), including identification number(s), used in deriving the curve; and a specification of the critical streamflow used to determine the project's dependable capacity;

(D) Existing and proposed uses of project waters for irrigation, domestic water supply, industrial and other purposes, including any upstream or downstream requirements or constraints to accommodate those purposes;

(E) Existing instream flow uses of streams in the project area that would be affected by project construction and operation; information on existing water rights and water rights applications potentially affecting or affected by the project;

(F) Any federally-approved water quality standards applicable to project waters;

(G) Seasonal variation of existing water quality data for any stream, lake, or reservoir that would be affected by the proposed project, including information on:

(1) Water temperature and dissolved oxygen, including seasonal vertical profiles in the reservoir;

(2) Other physical and chemical parameters to include, as appropriate for the project; total dissolved gas, pH, total hardness, specific conductance, chlorophyll a, suspended sediment concentrations, total nitrogen (mg/L as N), total phosphorus (mg/L as P), and fecal coliform (*E. Coli*) concentrations;

(H) The following data with respect to any existing or proposed lake or reservoir associated with the proposed project; surface area, volume, maximum depth, mean depth, flushing rate, shoreline length, substrate composition; and

(I) Gradient for downstream reaches directly affected by the proposed project.

(iv) *Fish and aquatic resources.* A description of the fish and other aquatic resources, including invasive species, in the project vicinity. This section must discuss the existing fish and macroinvertebrate communities, including the presence or absence of anadromous, catadromous, or migratory fish, and any known or potential upstream or downstream impacts of the project on the aquatic community. Components of the description must include:

(A) Identification of existing fish and aquatic communities;

(B) Identification of any essential fish habitat as defined under the Magnuson-Stevens Fishery Conservation and Management Act and established by the National Marine Fisheries Service; and