**Chapter 526: Cooling Water Intake Structures**

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**Chapter 526: Cooling Water Intake Structures**

SUMMARY: This Chapter establishes requirements that apply to cooling water intake structures at new and existing facilities that are subject to section 316(b) of the Clean Water Act (CWA), 33 U.S.C. § 1326(b). These requirements include standards for minimizing adverse environmental impact associated with the use of cooling water intake structures and required procedures (for example, permit application requirements, information submission requirements) for establishing the appropriate technology requirements at certain specified facilities as well as monitoring, reporting, and recordkeeping requirements to demonstrate compliance. In combination, these components represent the best technology available for minimizing adverse environmental impact associated with the use of cooling water intake structures.

These requirements will be established and implemented in Maine Pollutant Discharge Elimination System (MEPDES) permits issued under the State’s delegated authority under the CWA, in accordance with the procedures of Chapter 522 and Chapter 2 of the Department of Environmental Protection’s (Department) rules, as applicable. In the event of inconsistencies with Chapter 522 or Chapter 2, cooling water intake applications will be processed in accordance with the procedures set forth in this Chapter.

This rule does not authorize take, as defined by the Endangered Species Act, 16 U.S.C. 1532(19). The U.S. Fish and Wildlife Service and National Marine Fisheries Service (the Services) have determined that any impingement (including entrapment) or entrainment of State or federally listed species constitutes take. Such take may be authorized pursuant to the conditions of a permit issued under 16 U.S.C. 1539(a) or where consistent with an Incidental Take Statement contained in a Biological Opinion pursuant to 16 U.S.C. 1536(o).

**1. References to Federal Regulations and Definitions.** Portions of this Chapter refer to regulations of the United States Environmental Protection Agency (EPA). Unless otherwise specified, the federal regulations referenced are those regulations effective as of January 1, 2024, as they appear in volume 40 of the Code of Federal Regulations (CFR). Additional definitions for terms used in this Chapter may be found in Chapter 520.

**2. Purpose and Scope.** This Chapter establishes requirements that apply to cooling water intake structures at new and existing facilities that are subject to section 316(b) of the Clean Water Act (CWA). Cooling water intake structures not subject to requirements under sections 5 through 11 or 12 through 17 must meet requirements under section 316(b) of the CWA established by the Department on a case-by-case, best professional judgment (BPJ) basis. [*See* 40 CFR § 125.90(b)]

**3. Compliance with this Chapter.**

**A. Application.** Applications for existing facilities must be submitted in accordance with section

14.A and B. Applications for new facilities must be submitted in accordance with Chapter 521(4)(c) and sections 8 and 18.

**B.** You must comply with this Chapter when a MEPDES permit containing requirements consistent with this Chapter is issued to you.

**4. Definitions.** The following terms, as used in this Chapter, have the following meanings, unless the context indicates otherwise. Terms not otherwise defined have the meaning given by Chapter 520, Title 38 M.R.S. § 361-A, or the Federal Clean Water Act. When a defined term appears in a definition, the defined term is sometimes italicized as an aid to readers. [*See* 40 CFR § 125.83 and 125.92]

**A. Actual intake flow (AIF)** means the average volume of water withdrawn on an annual basis by the cooling water intake structures over the previous five years. Actual intake flow is measured at a location within the *cooling water intake structure* that the Department deems appropriate. The calculation of actual intake flow includes days of zero flow. AIF does not include flows associated with emergency and fire suppression capacity.

**B. All life stages of fish and shellfish** means eggs, larvae, juveniles, and adults. It does not include members of the infraclass Cirripedia in the subphylum Crustacea (barnacles), green mussels (*Perna viridis*), or zebra mussels (*Dreissena polymorpha*). The Department may determine that all life stages of fish and shellfish does not include other specified nuisance species.

**C. Annual mean flow** means the average of daily flows over a calendar year. Historical data (up to 10 years) must be used where available.

**D. Closed-cycle recirculating system** means a system designed and properly operated using minimized make-up and blowdown flows withdrawn from a water of the State to support contact or non-contact cooling uses within a facility, or a system designed to include certain impoundments. A closed-cycle recirculating system passes cooling water through a heat exchange system such as a condenser and other components of the cooling system and reuses the water for cooling multiple times.

(1)  *Closed-cycle recirculating system* includes wet, dry, or hybrid cooling towers, a system of impoundments that are not waters of the State, or any combination thereof. A properly operated and maintained closed-cycle recirculating system withdraws new source water (make-up water) only to replenish losses that have occurred due to blowdown, drift, and evaporation. If waters of the State are withdrawn for purposes of replenishing losses to a closed-cycle recirculating system other than those due to blowdown, drift, and evaporation from the cooling system, the Department may determine a cooling system is a closed-cycle recirculating system if the facility demonstrates to the satisfaction of the Department that make-up water withdrawals attributed specifically to the cooling portion of the cooling system have been minimized.

(2)  *Closed-cycle recirculating system* also includes a system with impoundments of waters of the State where the impoundment was created for the purpose of serving as part of the cooling water system as documented in the project purpose statement for any required Clean Water Act section 404 permit obtained to construct the impoundment. In the case of an impoundment whose construction pre-dated the CWA requirement to obtain a section 404 permit, documentation of the project’s purpose must be demonstrated to the satisfaction of the Department. This documentation could be some other license or permit obtained to lawfully construct the impoundment for the purposes of a cooling water system, or other such evidence as the Department finds necessary. For impoundments constructed in uplands or not in waters of the State, no documentation of a section 404 or other permit is required. If waters of the State are withdrawn for purposes of replenishing losses to a closed-cycle recirculating system other than those due to blowdown, drift, and evaporation from the cooling system, the Department may determine a cooling system is a closed-cycle recirculating system if the facility demonstrates to the satisfaction of the Department that make-up water withdrawals attributed specifically to the cooling portion of the cooling system have been minimized.

**E. Contact cooling water**means water used for cooling that comes into direct contact with any raw material, product, or byproduct. Examples of contact cooling water may include but are not limited to quench water at facilities, cooling water in a cracking unit, and cooling water directly added to food and agricultural products processing.

**F. Cooling water** means water used for contact or non-contact cooling, including water used for equipment cooling, evaporative cooling tower makeup, and dilution of effluent heat content. The intended use of the cooling water is to absorb waste heat rejected from the process or processes used, or from auxiliary operations on the facility’s premises. Cooling water obtained from a public water system, reclaimed water from wastewater treatment facilities or desalination plants, treated effluent from a manufacturing facility, or cooling water that is used in a manufacturing process either before or after it is used for cooling as process water, is not considered cooling water for the purposes of calculating the percentage of a facility’s intake flow that is used for cooling purposes in section 5.D or 12.A(3).

**G. Cooling water intake structure** means the total physical structure and any associated constructed waterways used to withdraw cooling water from waters of the State. The cooling water intake structure extends from the point at which water is first withdrawn from surface waters of the State up to, and including, the intake pumps, if present.

**H. Design intake flow (DIF)** means the value assigned during the cooling water intake structure design to the maximum instantaneous rate of flow of water the cooling water intake system is capable of withdrawing from a source water body. The facility’s DIF may be adjusted to reflect permanent changes to the maximum capabilities of the cooling water intake system to withdraw cooling water, including pumps permanently removed from service, flow limit devices, and physical limitations of the piping. DIF does not include values associated with emergency and fire suppression capacity or redundant pumps (i.e., back-up pumps).

**I. Design intake velocity** means the value assigned (during the design of a cooling water intake structure) to the average speed at which intake water passes through the open area of the intake screen (or other device) against which organisms might be impinged or through which they might be entrained.

**J. Entrainment**means any life stages of fish and shellfish in the intake water flow entering and passing through a cooling water intake structure and into a cooling water system, including a condenser or heat exchanger. Entrainable organisms include any organisms potentially subject to *entrainment.* For purposes of this Chapter, *entrainment* excludes those organisms that are collected or retained by a sieve with maximum opening dimension of 0.56 inches. Examples of sieves meeting this definition include but are not limited to a 3⁄8-inch square mesh, or a 1⁄2 by 1⁄4-inch mesh. A facility must use the same mesh size when counting entrainment as is used when counting impingement.

**K. Entrainment mortality** means death as a result of entrainment through the cooling water intake structure, or death as a result of exclusion from the cooling water intake structure by fine mesh screens or other protective devices intended to prevent the passage of entrainable organisms through the cooling water intake structure.

**L. Entrapment**means the condition where impingeable fish and shellfish lack the means to escape the cooling water intake. *Entrapment* includes but is not limited to: Organisms caught in the bucket of a traveling screen and unable to reach a fish return; organisms caught in the forebay of a cooling water intake system without any means of being returned to the source water body without experiencing mortality; or cooling water intake systems where the velocities in the intake pipes or in any channels leading to the forebay prevent organisms from being able to return to the source water body through the intake pipe or channel.

**M. Estuary**means a semi-enclosed body of water that has a free connection with open seas and within which the seawater is measurably diluted with fresh water derived from land drainage. The salinity of an estuary exceeds 0.5 parts per thousand (by mass) but is typically less than 30 parts per thousand (by mass).

**N. Existing facility** means any facility that commenced construction as described in 40 CFR § 122.29(b)(4) on or before January 17, 2002, and any modification of, or any addition of a unit at such a facility. A facility built adjacent to another facility would be a new facility while the original facility would remain as an existing facility for purposes of this Chapter. A facility cannot both be an existing facility and a new facility as defined in this Chapter.

**O. Flow reduction** means any modification to a cooling water intake structure or its operation that serves to reduce the volume of cooling water withdrawn. Examples include, but are not limited to, variable speed pumps, seasonal flow reductions, wet cooling towers, dry cooling towers, hybrid cooling towers, unit closures, or substitution for withdrawals by reuse of effluent from a nearby facility.

**P. Fragile species** means those species of fish and shellfish that are least likely to survive any form of impingement. For purposes of this Chapter, *fragile species* are defined as those with an impingement survival rate of less than 30 percent, including but not limited to alewife, American shad, Atlantic herring, Atlantic long-finned squid, Atlantic menhaden, bay anchovy, blueback herring, bluefish, butterfish, gizzard shad, gray snapper, hickory shad, menhaden, rainbow smelt, round herring, and silver anchovy.

**Q. Freshwater river or stream** means a lotic (free flowing) system that does not receive significant inflows of water from oceans or bays due to tidal action. For the purposes of this Chapter, a flow-through reservoir with a retention time of seven days or less will be considered a freshwater river or stream.

**R. Hydraulic zone of influence** means that portion of the source water body hydraulically affected by the cooling water intake structure withdrawal of water.

**S. Impingement**means the entrapment of any life stages of fish and shellfish on the outer part of an intake structure or against a screening device during periods of intake water withdrawal. For purposes of this Chapter, *impingement* includes those organisms collected or retained on a sieve with maximum distance in the opening of 0.56 inches and excludes those organisms that pass through the sieve. Examples of sieves meeting this definition include but are not limited to a 3⁄8-inch square mesh, or a 1⁄2 by 1⁄4-inch mesh. This definition is intended to prevent the conversion of entrainable organisms to counts of impingement or impingement mortality. The Owner or Operator of a facility must use a sieve with the same mesh size when counting entrainment as is used when counting impingement.

**T. Impingement mortality**means death as a result of impingement. Impingement mortality also includes organisms removed from their natural ecosystem and lacking the ability to escape the cooling water intake system, and thus subject to inevitable mortality.

**U. Independent supplier** means an entity, other than the regulated facility, that owns and operates its own cooling water intake structure and directly withdraws water from waters of the State. The supplier provides the cooling water to other facilities for their use but may itself also use a portion of the water. An entity that provides potable water to residential populations (e.g., public water system) is not a supplier for purposes of this Chapter.

**V. Lake or reservoir** means any inland body of open water with some minimum surface area free of rooted vegetation and with an average hydraulic retention time of more than seven days. Lakes or reservoirs might be natural water bodies or impounded streams, usually fresh, surrounded by land or by land and a man-made retainer (e.g., a dam). Lakes or reservoirs might be fed by rivers, streams, springs, and/or local precipitation. Flow-through reservoirs with an average hydraulic retention time of seven days or less should be considered a freshwater river or stream.

**W. Latent mortality** means the delayed mortality of organisms that were initially alive upon being impinged or entrained but that do not survive the delayed effects of impingement and entrainment during an extended holding period. Delayed effects of impingement and entrainment include but are not limited to temperature change, physical stresses, and chemical stresses.

**X. Maximize**means to increase to the greatest amount, extent, or degree reasonably possible.

**Y. Minimize**means to reduce to the smallest amount, extent, or degree reasonably possible.

**Z. Modified traveling screen** means a traveling water screen that incorporates measures protective of fish and shellfish, including but not limited to: screens with collection buckets or equivalent mechanisms designed to minimize turbulence to aquatic life; addition of a guard rail or barrier to prevent loss of fish from the collection system; replacement of screen panel materials with smooth woven mesh, drilled mesh, molded mesh, or similar materials that protect fish from descaling and other abrasive injury; continuous or near-continuous rotation of screens and operation of fish collection equipment to ensure any impinged organisms are recovered as soon as practical; a low pressure wash or gentle vacuum to remove fish prior to any high pressure spray to remove debris from the screens; and a fish handling and return system with sufficient water flow to return the fish directly to the source water in a manner that does not promote predation or re-impingement of the fish, or require a large vertical drop. The Department may approve of fish being returned to water sources other than the original source water, taking into account any recommendations from the Services with respect to endangered or threatened species. Examples of *modified traveling screens* include but are not limited to: Modified Ristroph screens with a fish handling and return system, dual flow screens with smooth mesh, and rotary screens with fish returns or vacuum returns.

**AA. Moribund**means dying; close to death.

**BB. Natural thermal stratification** means the naturally occurring division of a water body into horizontal layers of differing densities as a result of variations in temperature at different depths.

**CC. New facility** means any building, structure, facility, or installation that meets the definition of a “new source” or “new discharger” in Chapter 520 and 40 CFR § 122.29(b)(1), (2), and (4) and is a greenfield or stand-alone facility; commences construction after January 17, 2002; and uses either a newly constructed cooling water intake structure, or an existing cooling water intake structure whose design capacity is increased to accommodate the intake of additional cooling water. New facilities include only “greenfield” and “stand-alone” facilities. A greenfield facility is a facility that is constructed at a site at which no other source is located, or that totally replaces the process or production equipment at an existing facility (see 40 CFR § 122.29(b)(1)(i) and (ii)). A stand-alone facility is a new, separate facility that is constructed on property where an existing facility is located and whose processes are substantially independent of the existing facility at the same site (see 40 CFR § §122.29(b)(1)(iii)). New facility does not include new units that are added to a facility for purposes of the same general industrial operation (for example, a new peaking unit at an electrical generating station).

(1) Examples of “new facilities” include, but are not limited to, the following scenarios:

(i) A new facility is constructed on a site that has never been used for industrial or commercial activity. It has a new cooling water intake structure for its own use.

(ii) A facility is demolished and another facility is constructed in its place. The newly constructed facility uses the original facility’s cooling water intake structure but modifies it to increase the design capacity to accommodate the intake of additional cooling water.

(iii) A facility is constructed on the same property as an existing facility but is a separate and independent industrial operation. The cooling water intake structure used by the original facility is modified by constructing a new intake bay for the use of the newly constructed facility or is otherwise modified to increase the intake capacity for the new facility.

(2) Examples of facilities that would not be considered a “new facility” include, but are not limited to, the following scenarios:

(i) A facility in commercial or industrial operation is modified and either continues to use its original cooling water intake structure or uses a new or modified cooling water intake structure.

(ii) A facility has an existing intake structure. Another facility (a separate and independent industrial operation) is constructed on the same property and connects to the facility’s cooling water intake structure behind the intake pumps, and the design capacity of the cooling water intake structure has not been increased. This facility would not be considered a “new facility” even if routine maintenance or repairs that do not increase the design capacity were performed on the intake structure.

**DD. New unit** means a new “stand-alone” unit at an existing facility where construction of the new unit begins after October 14, 2014, and that does not otherwise meet the definition of a new facility in this Chapter or is not otherwise already subject to this Chapter. A stand-alone unit is a separate unit that is added to a facility for either the same general industrial operation or another purpose. A new unit may have its own dedicated cooling water intake structure, or the new unit may use an existing or modified cooling water intake structure.

**EE. Ocean**means marine open coastal waters with a salinity greater than or equal to 30 parts per thousand (by mass).

**FF. Offshore velocity cap** means a velocity cap located a minimum of 800 feet from the shoreline. A velocity cap is an open intake designed to change the direction of water withdrawal from vertical to horizontal, thereby creating horizontal velocity patterns that result in avoidance of the intake by fish and other aquatic organisms. For purposes of this Chapter, the velocity cap must use bar screens or otherwise exclude marine mammals, sea turtles, and other large aquatic organisms.

**GG. Operational measure** means a modification to any operation that serves to minimize impact to all life stages of fish and shellfish from the cooling water intake structure. Examples of *operational measures* include, but are not limited to, more frequent rotation of traveling screens, use of a low-pressure wash to remove fish prior to any high-pressure spray to remove debris, maintaining adequate volume of water in a fish return, and debris minimization measures such as air sparging of intake screens and/or other measures taken to maintain the design intake velocity.

**HH. Social benefits** means the increase in social welfare that results from taking an action. Social benefits include private benefits and those benefits not taken into consideration by private decision makers in the actions they choose to take, including effects occurring in the future. Benefits valuation involves measuring the physical and biological effects on the environment from the actions taken. Benefits are generally treated one or more of three ways: a narrative containing a qualitative discussion of environmental effects, a quantified analysis expressed in physical or biological units, and a monetized benefits analysis in which dollar values are applied to quantified physical or biological units. The dollar values in a social benefits analysis are based on the principle of willingness-to-pay, which captures monetary benefits by measuring what individuals are willing to forgo in order to enjoy a particular benefit. Willingness-to-pay for nonuse values can be measured using benefits transfer or a stated preference survey.

**II. Social costs** means costs estimated from the viewpoint of society, rather than individual stakeholders. Social cost represents the total burden imposed on the economy; it is the sum of all opportunity costs incurred associated with taking actions. These opportunity costs consist of the value lost to society of all the goods and services that will not be produced and consumed as a facility complies with permit requirements, and society reallocates resources away from other production activities and towards minimizing adverse environmental impacts.

**JJ. Source water** means the water body (waters of the State) from which the cooling water is withdrawn.

**KK. Thermocline**means the middle layer of a thermally stratified lake or reservoir. In this layer, there is a rapid decrease in temperatures.

**LL. Tidal excursion** means the horizontal distance along the estuary or tidal river that a particle moves during one tidal cycle of ebb and flow.

**MM. Tidal river** means the most seaward reach of a river or stream where the salinity is typically less than or equal to 0.5 parts per thousand (by mass) at a time of annual low flow and whose surface elevation responds to the effects of coastal lunar tides.

**5.** **Applicability to New Facilities** [*See* 40 CFR § 125.81]

**A.** The Owner or Operator of a new facility, as defined in Chapter 520, that is a point source that uses or proposes to use a cooling water intake structure, is subject to the requirements of this Chapter.

(1) Sections 6 through 11 apply if the facility:

(i) Has at least one cooling water intake structure that uses at least 25 percent of the water it withdraws for cooling purposes as specified in paragraph C of this section; and

(ii) Has a design intake flow greater than two million gallons per day (MGD).

**B.** New facilities that do not meet the threshold requirements regarding amount of water withdrawn or percentage of water withdrawn for cooling water purposes in section 5.A must meet requirements under section 316(b) of the CWA established by the Department on a case-by-case, BPJ basis.

**C.** Use of a cooling water intake structure includes obtaining cooling water by any sort of contract or arrangement with an independent supplier (or multiple suppliers) of cooling water if the supplier or suppliers withdraw(s) water from waters of the State. Use of cooling water does not include obtaining cooling water from a public water system or the use of treated effluent that otherwise would be discharged to a water of the State. This provision is intended to prevent circumvention of these requirements by creating arrangements to receive cooling water from an entity that is not itself a point source.

**D.** The threshold requirement that at least 25 percent of water withdrawn be used for cooling purposes must be measured on an average monthly basis. A new facility meets the 25 percent cooling water threshold if, based on the new facility’s design, any monthly average over a year for the percentage of cooling water withdrawn is expected to equal or exceed 25 percent of the total water withdrawn.

**6.** **Terms and Conditions for New Facilities** [*See* 40 CFR § 125.84]

**A.** The Owner or Operator of a new facility must comply with:

(1) Track I in paragraph B or C of this section; or

(2) Track II in paragraph D of this section.

In addition to meeting the requirements in paragraph B, C, or D of this section, the Owner or Operator of a new facility may be required to comply with paragraph E of this section.

**B.** **Track I requirements for new facilities that withdraw equal to or greater than 10 MGD.** The Owner or Operator must comply with all of the following requirements:

(1) The Owner or Operator must reduce the intake flow, at a minimum, to a level commensurate with that which can be attained by a closed-cycle recirculating system;

(2) The Owner or Operator must design and construct each cooling water intake structure at the facility to a maximum through-screen design intake velocity of 0.5 feet per second (ft/s);

(3) The Owner or Operator must design and construct the cooling water intake structure such that the total design intake flow from all cooling water intake structures at the facility meets the following requirements:

(a) For cooling water intake structures located in a freshwater river or stream, the total design intake flow must be no greater than five percent of the source water annual mean flow;

(b) For cooling water intake structures located in a lake or reservoir, the total design intake flow must not disrupt the natural thermal stratification or turnover pattern (where present) of the source water except in cases where the disruption is determined to be beneficial to the management of fisheries for fish and shellfish by any fishery management agency(ies);

(c) For cooling water intake structures located in an estuary or tidal river, the total design intake flow over one tidal cycle of ebb and flow must be no greater than one percent of the volume of the water column within the area centered about the opening of the intake with a diameter defined by the distance of one tidal excursion at the mean low water level.

(4) The Owner or Operator must select and implement design and construction technologies or operational measures for minimizing impingement mortality of fish and shellfish if:

(a) There are threatened or endangered or otherwise protected federal, or state species, or critical habitat for these species, within the hydraulic zone of influence of the cooling water intake structure; or

(b) Based on information submitted by any fishery management agency(ies) or other relevant information, there are migratory and/or sport or commercial species of impingement concern to the Department that pass through the hydraulic zone of influence of the cooling water intake structure; or

(c) It is determined by the Department, based on information submitted by any fishery management agency(ies) or other relevant information, that the proposed facility, after meeting the technology-based performance requirements in paragraphs B(1), (2), and (3) of this section, would still contribute unacceptable stress to the protected species, critical habitat of those species, or species of concern.

(5) The Owner or Operator must select and implement design and construction technologies or operational measures for minimizing entrainment of entrainable life stages of fish and shellfish if:

(a) There are threatened or endangered or otherwise protected federal, or state species, or critical habitat for these species, within the hydraulic zone of influence of the cooling water intake structure; or

(b) Based on information submitted by any fishery management agency(ies) or other relevant information, there are or would be undesirable cumulative stressors affecting entrainable life stages of species of concern to the Department and the Department determines that the proposed facility, after meeting the technology-based performance requirements in paragraphs B(1), (2), and (3) of this section, would still contribute unacceptable stress to the protected species, critical habitat of those species, or species of concern.

(6) The Owner or Operator must submit the application information required in sections 18 and 8.B;

(7) The Owner or Operator must implement the monitoring requirements specified in section 9;

(8) The Owner or Operator must implement the recordkeeping and reporting requirements specified in section 10.

**C. Track I requirements for new facilities that withdraw greater than 2 MGD and less than 10 MGD and that choose not to comply with paragraph B of this section.** The Owner or Operator must comply with all the following requirements:

(1) The Owner or Operator must design and construct each cooling water intake structure at the facility to a maximum through-screen design intake velocity of 0.5 ft/s;

(2) The Owner or Operator must design and construct the cooling water intake structure such that the total design intake flow from all cooling water intake structures at the facility meets the following requirements:

(a) For cooling water intake structures located in a freshwater river or stream, the total design intake flow must be no greater than five percent of the source water annual mean flow;

(b) For cooling water intake structures located in a lake or reservoir, the total design intake flow must not disrupt the natural thermal stratification or turnover pattern (where present) of the source water except in cases where the disruption is determined to be beneficial to the management of fisheries for fish and shellfish by any fishery management agency(ies);

(c) For cooling water intake structures located in an estuary or tidal river, the total design intake flow over one tidal cycle of ebb and flow must be no greater than one percent of the volume of the water column within the area centered about the opening of the intake with a diameter defined by the distance of one tidal excursion at the mean low water level.

(3) The Owner or Operator must select and implement design and construction technologies or operational measures for minimizing impingement mortality of fish and shellfish if:

(a) There are threatened or endangered or otherwise protected federal, or state species, or critical habitat for these species, within the hydraulic zone of influence of the cooling water intake structure; or

(b) Based on information submitted by any fishery management agency(ies) or other relevant information, there are migratory and/or sport or commercial species of impingement concern to the Department that pass through the hydraulic zone of influence of the cooling water intake structure; or

(c) It is determined by the Department, based on information submitted by any fishery management agency(ies) or other relevant information, that the proposed facility, after meeting the technology-based performance requirements in paragraphs C(1) and (2) of this section, would still contribute unacceptable stress to the protected species, critical habitat of those species, or species of concern.

(4) The Owner or Operator must select and implement design and construction technologies or operational measures for minimizing entrainment of entrainable life stages of fish and shellfish;

(5) The Owner or Operator must submit the application information required in sections 18 and 8.B(2), (3), and (4);

(6) The Owner or Operator must implement the monitoring requirements specified in section 9;

(7) The Owner or Operator must implement the recordkeeping and reporting requirements specified in section 10.

**D.****Track II.** The Owner or Operator of a new facility that chooses to comply under Track II must comply with the following requirements:

(1) The Owner or Operator must demonstrate to the Department that the technologies employed will reduce the level of adverse environmental impact from the cooling water intake structures to a level comparable to that which the Owner or Operator would achieve were the Owner or Operator to implement the requirements of paragraphs B(1) and (2) of this section. This demonstration must include a showing that the impacts to fish and shellfish, including important forage and predator species, within the watershed will be comparable to those which would result if the Owner or Operator were to implement the requirements of paragraphs B(1) and (2) of this section. The Department must consider information provided by any fishery management agency and may also consider data and information from other sources.

(2) The Owner or Operator must design and construct the cooling water intake structure such that the total design intake flow from all cooling water intake structures at the facility meet the following requirements:

(a) For cooling water intake structures located in a freshwater river or stream, the total design intake flow must be no greater than five percent of the source water annual mean flow;

(b) For cooling water intake structures located in a lake or reservoir, the total design intake flow must not disrupt the natural thermal stratification or turnover pattern (where present) of the source water except in cases where the disruption is determined to be beneficial to the management of fisheries for fish and shellfish by any fishery management agency(ies);

(c) For cooling water intake structures located in an estuary or tidal river, the total design intake flow over one tidal cycle of ebb and flow must be no greater than one percent of the volume of the water column within the area centered about the opening of the intake with a diameter defined by the distance of one tidal excursion at the mean low water level.

(3) The Owner or Operator must submit the application information required in sections 18 and 8.C.

(4) The Owner or Operator must implement the monitoring requirements specified in section 9.

(5) The Owner or Operator must implement the recordkeeping and reporting requirements specified in section 10.

**E.** The Owner or Operator must comply with any more stringent requirements relating to the location, design, construction, and capacity of a cooling water intake structure or monitoring requirements at a new facility that the Department deems are reasonably necessary to comply with any provision of state law, including compliance with applicable state water quality standards (including designated uses, criteria, and antidegradation requirements).

**7.** **Alternative Terms and Conditions for New Facilities.** [*See* 40 CFR § 125.85]

**A.** Any interested person may request that alternative requirements less stringent than those specified in sections 6.A through 6.E be imposed in the permit. The Department may establish alternative requirements less stringent than the requirements of sections 6.A through 6.E only if:

(1) There is an applicable requirement under sections 6.A through 6.E;

(2) The Department in consultation with the EPA Region 1 Regional Administrator determines that data specific to the facility indicate that compliance with the requirement at issue would result in compliance costs wholly out of proportion to the costs EPA considered in establishing the requirement at issue or would result in significant adverse impacts on local air quality, significant adverse impacts on local water resources other than impingement or entrainment, or significant adverse impacts on local energy markets;

(3) The alternative requirement requested is no less stringent than justified by the wholly out of proportion cost or the significant adverse impacts on local air quality, significant adverse impacts on local water resources other than impingement or entrainment, or significant adverse impacts on local energy markets; and

(4) The alternative requirement will ensure compliance with other applicable provisions of the Clean Water Act and any applicable requirement of state law.

**B.** The burden is on the person requesting the alternative requirement to demonstrate that alternative requirements should be authorized.

**8. Application Requirements for New Facilities** [*See* 40 CFR § 125.86]

**A.**

(1) The Owner or Operator of a new facility must submit to the Department a statement that the Owner or Operator intends to comply with either:

(a) The Track I requirements for new facilities that withdraw equal to or greater than 10 MGD in section 6.B;

(b) The Track I requirements for new facilities that withdraw greater than 2 MGD and less than 10 MGD in section 6.C; or

(c) The requirements for Track II in section 6.D.

(2) The Owner or Operator must also submit the application information required by section 18 and the information required in either paragraph B of this section for Track I or paragraph C of this section for Track II when the Owner or Operator applies for a new or reissued MEPDES permit in accordance with Chapter 521.

**B. Track I application requirements.** To demonstrate compliance with Track I requirements in section 6.B or C, the Owner or Operator must collect and submit to the Department the information in paragraphs B(1) through (4) of this section.

(1) *Flow reduction information.* If the Owner or Operator must comply with the flow reduction requirements in section 6.B(1), the Owner or Operator must submit the following information to the Department to demonstrate that the Owner or Operator has reduced the flow to a level commensurate with that which can be attained by a closed-cycle recirculating system:

(a) A narrative description of the system that has been designed to reduce the intake flow to a level commensurate with that which can be attained by a closed-cycle recirculating system and any engineering calculations, including documentation demonstrating that the make-up and blowdown flows have been minimized; and

(b) If the flow reduction requirement is met entirely, or in part, by reusing or recycling water withdrawn for cooling purposes in subsequent industrial processes, the Owner or Operator must provide documentation that the amount of cooling water that is not reused or recycled has been minimized.

(2) *Velocity information.* The Owner or Operator must submit the following information to the Department to demonstrate that the Owner or Operator is complying with the requirement to meet a maximum through-screen design intake velocity of no more than 0.5 ft/s at each cooling water intake structure as required in section 6.B(2) and C(1):

(a) A narrative description of the design, structure, equipment, and operation used to meet the velocity requirement; and

(b) Design calculations showing that the velocity requirement will be met at minimum ambient source water surface elevations (based on best professional judgment using available hydrological data) and maximum head loss across the screens or other device.

(3) *Source water body flow information.* The Owner or Operator must submit to the Department the following information to demonstrate that the cooling water intake structure meets the flow requirements in section 6.B(3) or C(2).

(a) If the cooling water intake structure is located in a freshwater river or stream, the Owner or Operator must provide the annual mean flow and any supporting documentation and engineering calculations to show that the cooling water intake structure meets the flow requirements;

(b) If the cooling water intake structure is located in an estuary or tidal river, the Owner or Operator must provide the mean low water tidal excursion distance and any supporting documentation and engineering calculations to show that the cooling water intake structure facility meets the flow requirements; and

(c) If the cooling water intake structure is located in a lake or reservoir, the Owner or Operator must provide a narrative description of the water body thermal stratification, and any supporting documentation and engineering calculations to show that the natural thermal stratification and turnover pattern will not be disrupted by the total design intake flow. In cases where the disruption is determined to be beneficial to the management of fisheries for fish and shellfish, the Owner or Operator must provide supporting documentation and include a written concurrence from any fisheries management agency(ies) with responsibility for fisheries potentially affected by the cooling water intake structure(s).

(4) *Design and Construction Technology Plan.* To comply with section 6.B(4) and (5), or C(3) and (4), the Owner or Operator must submit to the Department the following information in a Design and Construction Technology Plan:

(a) Information to demonstrate whether or not the Owner or Operator meets the criteria in section 6 paragraphs B(4) and B(5), or C(3) and C(4);

(b) Delineation of the hydraulic zone of influence for the cooling water intake structure;

(c) The Owner or Operator of a new facility required to install design and construction technologies and/or operational measures must develop a plan that explains the technologies and measures selected; this plan shall be based on information collected for the Source Water Biological Baseline Characterization required by section 18. Examples of appropriate technologies include, but are not limited to, wedgewire screens, fine mesh screens, fish handling and return systems, barrier nets, aquatic filter barrier systems, etc. Examples of appropriate operational measures include, but are not limited to, seasonal shutdowns or reductions in flow, and continuous operations of screens, etc. The plan must contain the following information:

(i) A narrative description of the design and operation of the design and construction technologies, including fish-handling and return systems, that the Owner or Operator will use to maximize the survival of those species expected to be most susceptible to impingement. Provide species-specific information that demonstrates the efficacy of the technology;

(ii) A narrative description of the design and operation of the design and construction technologies that the Owner or Operator will use to minimize entrainment of those species expected to be the most susceptible to entrainment. Provide species-specific information that demonstrates the efficacy of the technology; and

(iii) Design calculations, drawings, and estimates to support the descriptions provided in paragraphs B(4)(c)(i) and (ii) of this section.

**C. Application requirements for Track II.** If the Owner or Operator has chosen to comply with the requirements of Track II in section 6.D, the Owner or Operator must collect and submit the following information:

(1) *Source water body flow information.* The Owner or Operator must submit to the Department the following information to demonstrate that the cooling water intake structure meets the source water body requirements in section 6.D(2):

(a) If the cooling water intake structure is located in a freshwater river or stream, the Owner or Operator must provide the annual mean flow and any supporting documentation and engineering calculations to show that the cooling water intake structure meets the flow requirements;

(b) If the cooling water intake structure is located in an estuary or tidal river, the Owner or Operator must provide the mean low water tidal excursion distance and any supporting documentation and engineering calculations to show that the cooling water intake structure facility meets the flow requirements; and

(c) If the cooling water intake structure is located in a lake or reservoir, the Owner or Operator must provide a narrative description of the water body thermal stratification, and any supporting documentation and engineering calculations to show that the natural thermal stratification and thermal or turnover pattern will not be disrupted by the total design intake flow. In cases where the disruption is determined to be beneficial to the management of fisheries for fish and shellfish, the Owner or Operator must provide supporting documentation and include a written concurrence from any fisheries management agency(ies) with responsibility for fisheries potentially affected by the cooling water intake structure(s).

(2) *Track II Comprehensive Demonstration Study.* The Owner or Operator must perform and submit the results of a Comprehensive Demonstration Study (Study). This information is required to characterize the source water baseline in the vicinity of the cooling water intake structure(s), characterize operation of the cooling water intake(s), and to confirm that the technology(ies) proposed and/or implemented at the cooling water intake structure reduce the impacts to fish and shellfish to levels comparable to those the Owner or Operator would achieve were the Owner or Operator to implement the requirements in section 6.B(1) and (2) of Track I. To meet the “comparable level” requirement, the Owner or Operator must demonstrate that:

(a) The Owner or Operator has reduced both impingement mortality and entrainment of all life stages of fish and shellfish to 90 percent or greater of the reduction that would be achieved through section 6.B(1) and (2); or

(b) [Reserved]

(c) The Owner or Operator must develop and submit a plan to the Department containing a proposal for how information will be collected to support the Study. The plan must include:

(i) A description of the proposed and/or implemented technology(ies) to be evaluated in the Study;

(ii) A list and description of any historical studies characterizing the physical and biological conditions in the vicinity of the proposed or actual intakes and their relevancy to the proposed Study. If the Owner or Operator proposes to rely on existing source water body data, it must be no more than 5 years old, the Owner or Operator must demonstrate that the existing data are sufficient to develop a scientifically valid estimate of potential impingement and entrainment impacts, and the Owner or Operator must provide documentation showing that the data were collected using appropriate quality assurance/quality control procedures;

(iii) Any public participation or consultation with Federal or State agencies undertaken in developing the plan; and

(iv) A sampling plan for data that will be collected using actual field studies in the source water body. The sampling plan must document all methods and quality assurance procedures for sampling and data analysis. The sampling and data analysis methods the Owner or Operator proposes must be appropriate for a quantitative survey and based on consideration of methods used in other studies performed in the source water body. The sampling plan must include a description of the study area (including the area of influence of the cooling water intake structure and at least 100 meters beyond); taxonomic identification of the sampled or evaluated biological assemblages (including all life stages of fish and shellfish); and sampling and data analysis methods; and

(d) The Owner or Operator must submit documentation of the results of the Study to the Department. Documentation of the results of the Study must include:

(i) *Source Water Biological Study.* The Source Water Biological Study must include:

(1) A taxonomic identification and characterization of aquatic biological resources including: a summary of historical and contemporary aquatic biological resources; determination and description of the target populations of concern (those species of fish and shellfish and all life stages that are most susceptible to impingement and entrainment); and a description of the abundance and temporal/spatial characterization of the target populations based on the collection of multiple years of data to capture the seasonal and daily activities (e.g., spawning, feeding, and water column migration) of all life stages of fish and shellfish found in the vicinity of the cooling water intake structure;

(2) An identification of all threatened or endangered species that might be susceptible to impingement and entrainment by the proposed cooling water intake structure(s); and

(3) A description of additional chemical, water quality, and other anthropogenic stresses on the source water body.

(ii) *Evaluation of potential cooling water intake structure effects.* This evaluation will include:

(1) Calculations of the reduction in impingement mortality and entrainment of all life stages of fish and shellfish that would need to be achieved by the technologies the Owner or Operator has selected to implement to meet requirements under Track II. To do this, the Owner or Operator must determine the reduction in impingement mortality and entrainment that would be achieved by implementing the requirements of section 6.B(1) and (2) of Track I at the site.

(2) An engineering estimate of efficacy for the proposed and/or implemented technologies used to minimize impingement mortality and entrainment of all life stages of fish and shellfish and maximize survival of impinged life stages of fish and shellfish. The Owner or Operator must demonstrate that the technologies reduce impingement mortality and entrainment of all life stages of fish and shellfish to a comparable level to that which the Owner or Operator would achieve were the Owner or Operator to implement the requirements in section 6.B(1) and (2) of Track I. The efficacy projection must include a site-specific evaluation of the suitability of the proposed and/or implemented technology(ies) for reducing impingement mortality and entrainment based on the results of the Source Water Biological Study in paragraph C(2)(d)(i) of this section. Efficacy estimates may be determined based on case studies that have been conducted in the vicinity of the cooling water intake structure and/or site-specific technology prototype studies.

(iii) [Reserved]

(iv) *Verification monitoring plan.* The Owner or Operator must include in the Study a plan to conduct, at a minimum, two years of monitoring to verify the full-scale performance of the proposed or implemented technologies and/or operational measures. Verification monitoring must begin at the start of operations of the cooling water intake structure and continue for a sufficient period of time to demonstrate that the facility is reducing the level of impingement and entrainment to the level documented in paragraph C(2)(d)(ii) of this section. The plan must describe the frequency of monitoring and the parameters to be monitored. The Department will use the verification monitoring to confirm that the Owner or Operator is meeting the level of impingement mortality and entrainment reduction required in section 6.D, and that the operation of the technology has been optimized.

**9.   Monitoring Requirements for New Facilities.** An Owner or Operator of a new facility is required to perform monitoring to demonstrate compliance with the requirements specified in section 6 as follows. [*See* 40 CFR § 125.87]

**A. Biological monitoring.** The Owner or Operator must monitor both impingement and entrainment of the commercial, recreational, and forage base fish and shellfish species identified in either the Source Water Baseline Biological Characterization data required by section 18.D or the Comprehensive Demonstration Study required by section 8.C(2), depending on whether the Owner or Operator chose to comply with Track I or Track II. The monitoring methods used must be consistent with those used for the Source Water Baseline Biological Characterization data required in section 18.D or the Comprehensive Demonstration Study required by section 8.C(2). The Owner or Operator must follow the monitoring frequencies identified below for at least two years after the initial permit issuance. After that time, the Department may approve a request for less frequent sampling in the remaining years of the permit term and when the permit is reissued, if the Department determines the supporting data show that less frequent monitoring would still allow for the detection of any seasonal and daily variations in the species and numbers of individuals that are impinged or entrained.

(1) *Impingement sampling.* The Owner or Operator must collect samples to monitor impingement rates (simple enumeration) for each species over a 24-hour period and no less than once per month when the cooling water intake structure is in operation.

(2) *Entrainment sampling.* The Owner or Operator must collect samples at least biweekly to monitor entrainment rates (simple enumeration) for each species over a 24-hour period during the primary period of reproduction, larval recruitment, and peak abundance identified during the Source Water Baseline Biological Characterization required by section 18.D or the Comprehensive Demonstration Study required in section 8.C(2). The Owner or Operator must collect samples only when the cooling water intake structure is in operation.

**B. Velocity monitoring.** If the facility uses surface intake screen systems, the Owner or Operator must monitor head loss across the screens and correlate the measured value with the design intake velocity. The head loss across the intake screen must be measured at the minimum ambient source water surface elevation (best professional judgment based on available hydrological data). The maximum head loss across the screen for each cooling water intake structure must be used to determine compliance with the velocity requirement in section 6 paragraphs B(2) or C(1). If the facility uses devices other than surface intake screens, the Owner or Operator must monitor velocity at the point of entry through the device. The Owner or Operator must monitor head loss or velocity during initial facility startup, and thereafter, at the frequency specified in the MEPDES permit, but no less than once per quarter.

**C. Visual or remote inspections.** The Owner or Operator must either conduct visual inspections or employ remote monitoring devices during the period the cooling water intake structure is in operation. The Owner or Operator must conduct visual inspections at least weekly to ensure that any design and construction technologies required in section 6.B(4) and (5), or C(3) and (4) are maintained and operated to ensure that they will continue to function as designed. Alternatively, the Owner or Operator must inspect via remote monitoring devices to ensure that the impingement and entrainment technologies are functioning as designed.

**10. Recordkeeping and Reporting Requirements for New Facilities.** An Owner or Operator of a new facility is required to keep records and report information and data to the Department as follows. [*See* 40 CFR § 125.88]

**A.** The Owner or Operator must keep records of all the data used to complete the permit application and show compliance with the requirements, any supplemental information developed under section 8, and any compliance monitoring data submitted under section 9, for a period of at least three years from the date of permit issuance. The Department may require that these records be kept for a longer period.

**B.** The Owner or Operator must provide the following to the Department in a yearly status report:

(1) Biological monitoring records for each cooling water intake structure as required by section 9.A;

(2) Velocity and head loss monitoring records for each cooling water intake structure as required by section 9.B; and

(3) Records of visual or remote inspections as required in section 9.C.

**11.** **Application Processing Procedures for New Facilities.** [*See* 40 CFR § 125.89]

**A. Permit application.** The Department will review materials submitted by the applicant under sections 18 and 8 at the time of the initial permit application and before each permit renewal or reissuance.

(1) After receiving the initial permit application from the Owner or Operator of a new facility, the Department will determine applicable standards in section 6 to apply to the new facility. In addition, the Department will review materials to determine compliance with the applicable standards.

(2) For each subsequent permit renewal, the Department will review the application materials and monitoring data to determine whether requirements, or additional requirements, for design and construction technologies or operational measures should be included in the permit.

(3) For Track II facilities, the Department may review the information collection proposal plan required by section 8.C(2)(c). The facility may initiate sampling and data collection activities prior to receiving comment from the Department.

**B. Permitting requirements.** The requirements of this Chapter are implemented for a facility through a MEPDES permit. The Department will determine, based on the information submitted by the new facility in its permit application, the appropriate requirements and conditions to include in the permit based on the track (Track I or Track II) the new facility has chosen to comply with. The following requirements must be included in each permit:

(1)  *Cooling water intake structure requirements.* At a minimum, the permit conditions must include the performance standards that implement the requirements of section 6, paragraphs B(1), (2), (3), (4) and (5); C(1), (2), (3) and (4); or D(1) and (2). In determining compliance with proportional flow requirement in sections 6.B(3)(b); C(2)(b); and D(2)(b), the Department will consider anthropogenic factors (those not considered “natural”) unrelated to the new facility’s cooling water intake structure that can influence the occurrence and location of a thermocline. These include source water inflows, other water withdrawals, managed water uses, wastewater discharges, and flow/level management practices (e.g., some reservoirs release water from below the surface, close to the deepest areas).

(i) If an Owner or Operator of a facility chooses Track I, the Department will review the Design and Construction Technology Plan required in section 8.B(4) to evaluate the suitability and feasibility of the technology proposed to minimize impingement mortality and entrainment of all life stages of fish and shellfish. In the first permit issued, the Department will include a condition requiring the facility to reduce impingement mortality and entrainment commensurate with the implementation of the technologies in the permit. Under subsequent permits, the Department will review the performance of the technologies implemented and require additional or different design and construction technologies, if needed to minimize impingement mortality and entrainment of all life stages of fish and shellfish. In addition, the Department will consider whether more stringent conditions are reasonably necessary in accordance with section 6.E.

(ii) If an Owner or Operator of a facility chooses Track II, the Department will review the information submitted with the Comprehensive Demonstration Study required in section 8.C(2) and evaluate the suitability of the proposed design and construction technologies and operational measures to determine whether they will reduce both impingement mortality and entrainment of all life stages of fish and shellfish to 90 percent or greater of the reduction that could be achieved through Track I. In addition, the Department will review the Verification Monitoring Plan in section 8.C(2)(d)(iv) and require that the proposed monitoring begin at the start of operations of the cooling water intake structure and continue for a sufficient period of time to demonstrate that the technologies and operational measures meet the requirements in section 6.D(1). Under subsequent permits, the Department will review the performance of the additional and/or different technologies or measures used and determine that they reduce the level of adverse environmental impact from the cooling water intake structures to a comparable level that the facility would achieve were it to implement the requirements of section 6.B(1) and (2).

(2) *Monitoring conditions.* At a minimum, the permit must require the permittee to perform the monitoring required in section 9. The Department may modify the monitoring program when the permit is reissued and during the term of the permit based on changes in physical or biological conditions in the vicinity of the cooling water intake structure. The Department may require continued monitoring based on the results of the Verification Monitoring Plan in section 8.C(2)(d)(iv).

(3) *Record keeping and reporting.* At a minimum, the permit must require the permittee to report and keep records as required by section 10.

**12.****Applicability to Existing Facilities.** [*See* 40 CFR § 125.91]

**A.** The Owner or Operator of an existing facility, as defined in section 4, that is a point source that uses or proposes to use a cooling water intake structure, is subject to the requirements of this Chapter.

(1) Sections 13 through 17 apply if:

(i) The facility uses or proposes to use one or more cooling water intake structures with a cumulative DIF of greater than 2 MGD to withdraw water from waters of the State; and

(ii) Twenty-five percent or more of the water the facility withdraws on an actual intake flow basis is used exclusively for cooling purposes.

**B.** Existing facilities that do not meet the threshold requirements regarding amount of water withdrawn or percentage of water withdrawn for cooling water purposes in section 12.A. must meet requirements under section 316(b) of the CWA established by the Department on a case-by-case, best professional judgment (BPJ) basis.

**C.** Use of a cooling water intake structure includes obtaining cooling water by any sort of contract or arrangement with one or more independent suppliers of cooling water if the independent supplier withdraws water from waters of the State but is not itself a new or existing facility as defined in this Chapter, except as provided in paragraph D and E of this section. An Owner or Operator of an existing facility may not circumvent these requirements by creating arrangements to receive cooling water from an entity that is not itself a facility subject to this Chapter.

**D.** Obtaining cooling water from a public water system, using reclaimed water from wastewater treatment facilities or desalination plants, or recycling treated process wastewater effluent as cooling water does not constitute use of a cooling water intake structure for purposes.

**E.** This Chapter does not apply to offshore seafood processing facilities, offshore liquefied natural gas terminals, and offshore oil and gas extraction facilities that are existing facilities as defined in section 4.CC. The Owners and Operators of such facilities must meet requirements established by the Department on a case-by-case, BPJ basis.

**13.** **Terms and Conditions for Existing Facilities.** [*See* 40 CFR § 125.94]

**A.** **Applicable Best Technology Available for Minimizing Adverse Environmental Impact (BTA) standards.**

(1) The Owner or Operator of an existing facility with a cumulative DIF greater than 2 MGD is subject to the BTA standards for impingement mortality under paragraph C of this section, and entrainment under paragraph D of this section, including any measures to protect State or Federally listed threatened and endangered species and designated critical habitat established under paragraph G of this section.

(2) [Reserved]

(3) The Owner or Operator of a new unit is subject to the impingement mortality and entrainment standards under paragraph E of this section for all cooling water intake flows used by the new unit. The remainder of the existing facility is subject to the impingement mortality standard under paragraph C of this section, and the entrainment standard under paragraph D of this section. The entire existing facility including any new units is subject to any measures to protect State or Federally listed threatened and endangered species and designated critical habitat established under paragraph G of this section.

**B. Compliance with BTA standards.**

(1)  *Aligning compliance deadlines for impingement mortality and entrainment requirements.* After issuance of a final permit that establishes the entrainment requirements under section 13.D, the Owner or Operator of an existing facility must comply with the impingement mortality standard in section 13.C as soon as practicable. The Department may establish interim compliance milestones in the permit.

(2) After issuance of a final permit establishing the entrainment requirements under section 13.D, the Owner or Operator of an existing facility must comply with the entrainment standard as soon as practicable, based on a schedule of requirements established by the Department. The Department may establish interim compliance milestones in the permit.

(3) The Owner or Operator of a new unit at an existing facility must comply with the BTA standards at section 13.E with respect to the new unit upon commencement of the new unit’s operation.

**C. BTA Standards for Impingement Mortality.** The Owner or Operator of an existing facility must comply with one of the alternatives in paragraphs C(1) through (7) of this section, except as provided in paragraphs C(11) or (12) of this section, when approved by the Department. In addition, a facility may also be subject to the requirements of paragraphs C(8), C(9), or G of this section if the Department requires such additional measures.

(1)  *Closed-cycle recirculating system.* A facility must operate a closed-cycle recirculating system as defined in section 4. In addition, the Owner or Operator must monitor the actual intake flows at a minimum frequency of daily. The monitoring must be representative of normal operating conditions, and must include measuring cooling water withdrawals, make-up water, and blowdown volume. In lieu of daily intake flow monitoring, the Owner or Operator may monitor the cycles of concentration at a minimum frequency of daily; or

(2)  *0.5 Feet Per Second Through-Screen Design Velocity.* A facility must operate a cooling water intake structure that has a maximum design through-screen intake velocity of 0.5 feet per second. The Owner or Operator of the facility must submit information to the Department that demonstrates that the maximum design intake velocity as water passes through the structural components of a screen measured perpendicular to the screen mesh does not exceed 0.5 feet per second. The maximum velocity must be achieved under all conditions, including during minimum ambient source water surface elevations (based on BPJ using hydrological data) and during periods of maximum head loss across the screens or other devices during normal operation of the intake structure; or

(3)  *0.5 Feet Per Second Through-Screen Actual Velocity.* A facility must operate a cooling water intake structure that has a maximum through-screen intake velocity of 0.5 feet per second. The Owner or Operator of the facility must submit information to the Department that demonstrates that the maximum intake velocity as water passes through the structural components of a screen measured perpendicular to the screen mesh does not exceed 0.5 feet per second. The maximum velocity must be achieved under all conditions, including during minimum ambient source water surface elevations (based on BPJ using hydrological data) and during periods of maximum head loss across the screens or other devices during normal operation of the intake structure. The Department may authorize the Owner or Operator of the facility to exceed the 0.5 ft/sec velocity at an intake for brief periods for the purpose of maintaining the cooling water intake system, such as backwashing the screen face. If the intake does not have a screen, the maximum intake velocity perpendicular to the opening of the intake must not exceed 0.5 feet per second during minimum ambient source water surface elevations. In addition, the Owner or Operator must monitor the velocity at the screen at a minimum frequency of daily. In lieu of velocity monitoring at the screen face, the Owner or Operator may calculate the through-screen velocity using water flow, water depth, and the screen open areas; or

(4)  *Existing offshore velocity cap.* A facility must operate an existing offshore velocity cap as defined in this Chapter that was installed on or before October 14, 2014. Offshore velocity caps installed after October 14, 2014, must make either a demonstration under paragraph C(6) of this section or meet the performance standard under paragraph C(7) of this section. In addition, the Owner or Operator must monitor the intake flow at a minimum frequency of daily; or

(5)  *Modified traveling screens.* A facility must operate a modified traveling screen that the Department determines meets the definition in this Chapter and that, after review of the information required in the *impingement technology performance optimization study* described in section 18.F(1), the Department determines is the best technology available for impingement reduction at the site. As the basis for the Department’s determination, the Owner or Operator of the facility must demonstrate the technology is or will be optimized to minimize impingement mortality of all non-fragile species. The Department must include verifiable and enforceable permit conditions that ensure the technology will perform as demonstrated; or

(6)  *Systems of technologies as the BTA for impingement mortality.* A facility must operate a system of technologies, management practices, and operational measures that, after review of the information required in the *impingement technology performance optimization study* described in section 18.F(2), the Department determines is the best technology available for impingement reduction at the cooling water intake structures. As the basis for the Department’s determination, the Owner or Operator of the facility must demonstrate the system of technology has been optimized to minimize impingement mortality of all non-fragile species. In addition, the Department’s decision will be informed by comparing the impingement mortality performance data under 18.F(2)(d) to the impingement mortality performance standard that would otherwise apply under paragraph C(7) of this section. The Department will include verifiable and enforceable permit conditions that ensure the system of technologies will perform as demonstrated; or

(7)  *Impingement mortality performance standard.* A facility must achieve a 12-month impingement mortality performance standard of all life stages of fish and shellfish of no more than 24 percent mortality, including latent mortality, for all non-fragile species together that are collected or retained in a sieve with maximum opening dimension of 0.56 inches and kept for a holding period of 18 to 96 hours. The Department may, however, prescribe an alternative holding period. The Owner or Operator must conduct biological monitoring at a minimum frequency of monthly to demonstrate the impingement mortality performance. Each month, the Owner or Operator must use all of the monitoring data collected during the previous 12 months to calculate the 12-month survival percentage. The 12-month impingement mortality performance standard is the total number of fish killed divided by the total number of fish impinged over the course of the entire 12 months. The Owner or Operator of the facility must choose whether to demonstrate compliance with this requirement for the entire facility, or for each individual cooling water intake structure for which this paragraph is the selected impingement mortality requirement.

(8)  *Additional measures for shellfish.* The Owner or Operator must comply with any additional measures, such as seasonal deployment of barrier nets, established by the Department to protect shellfish.

(9) *Additional measures for other species.* The Owner or Operator must comply with any additional measures, established by the Department, to protect fragile species.

(10) *Reuse of other water for cooling purposes.* This impingement mortality standard does not apply to that portion of cooling water that is process water, gray water, wastewater, reclaimed water, or other waters reused as cooling water in lieu of water obtained by marine, estuarine, or freshwater intakes.

(11) *De minimis rate of impingement.* In limited circumstances, rates of impingement may be so low at a facility that additional impingement controls may not be justified. The Department, based on review of site-specific data submitted under section 18, may conclude that the documented rate of impingement at the cooling water intake is so low that no additional controls are warranted. For threatened or endangered species, all unauthorized take is prohibited by the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*). Notice of a determination that no additional impingement controls are warranted must be included in the draft or proposed permit and the Department’s response to all comments on this determination must be included in the record for the final permit.

(12) *Low-capacity utilization power generating units.* If an existing facility has a cooling water intake structure used for one or more existing electric generating units, each with an annual average capacity utilization rate of less than 8 percent averaged over a 24-month block contiguous period, the Owner or Operator may request the Department consider less stringent requirements for impingement mortality for that cooling water intake structure. The Department may, based on review of site-specific data concerning cooling water system data under section 18.E, establish the BTA standards for impingement mortality for that cooling water intake structure that are less stringent than paragraphs C(1) through (7) of this section.

**D. BTA standards for entrainment for existing facilities.** The Department must establish BTA standards for entrainment for each intake on a site-specific basis. These standards must reflect the Department’s determination of the maximum reduction in entrainment warranted after consideration of the relevant factors as specified in section 17. The Department may also require periodic reporting on the progress towards installation and operation of site-specific entrainment controls. These reports may include updates on planning, design, and construction or other appropriate topics as required by the Department. If the Department determines that the site-specific BTA standard for entrainment under this paragraph requires performance equivalent to a closed-cycle recirculating system as defined in this Chapter, then under section 13.C(1) the facility will comply with the impingement mortality standard for that intake.

**E. BTA standards for impingement mortality and entrainment for new units at existing facilities.** The Owner or Operator of a new unit at an existing facility must achieve the impingement mortality and entrainment standards provided in either paragraph E(1) or (2) of this section, except as provided in paragraph E(4) of this section, for each cooling water intake structure used to provide cooling water to the new unit.

(1) *Requirements for new units.* The Owner or Operator of the facility must reduce the design intake flow for the new unit, at a minimum, to a level commensurate with that which can be attained by the use of a closed-cycle recirculating system for the same level of cooling for the new unit.

(2) *Alternative requirements for new units.* The Owner or Operator of a new unit at an existing facility must demonstrate to the Department that the technologies and operational measures employed will reduce the level of adverse environmental impact from any cooling water intake structure used to supply cooling water to the new unit to a comparable level to that which would be achieved under section 13.E(1). This demonstration must include a showing that the entrainment reduction is equivalent to 90 percent or greater of the reduction that could be achieved through compliance with section 13.E(1). In addition, this demonstration must include a showing that the impacts to fish and shellfish, including important forage and predator species, within the watershed will be comparable to those which would result under the requirements of section 13.E(1).

(3) This standard does not apply to:

(i) Process water, gray water, wastewater, reclaimed water, or other waters reused as cooling water in lieu of water obtained by marine, estuarine, or freshwater intakes;

(ii) Cooling water used by manufacturing facilities for contact cooling purposes;

(iii) Portions of those water withdrawals for auxiliary plant cooling uses comprising less than 2 MGD of the facility’s flow; and

(iv) Any quantity of emergency back-up water flows.

(4) The Owner or Operator of a facility must comply with any alternative requirements established by the Department pursuant to section 17.B(7).

(5) For cooling water flows excluded by paragraph E(3) of this section, the Department may establish additional BTA standards for impingement mortality and entrainment on a site-specific basis.

**F. Nuclear facilities.** If the Owner or Operator of a nuclear facility demonstrates to the Department, upon the Department’s consultation with the U.S. Nuclear Regulatory Commission (NRC), the U.S. Department of Energy (DOE), or the Naval Nuclear Propulsion Program (NNPP), that compliance with this Chapter would result in a conflict with a safety requirement established by NRC, DOE, or NNPP, the Department will make a site-specific determination of BTA that would not result in a conflict with the NRC, DOE, or NNPP safety requirement.

**G. Additional measures to protect State or Federally listed threatened and endangered species and designated critical habitat.** The Department may establish in the permit additional control measures, monitoring requirements, and reporting requirements that are designed to minimize incidental take, reduce or remove more than minor detrimental effects to State or Federally listed species and designated critical habitat, or avoid jeopardizing State or Federally listed species or destroying or adversely modifying designated critical habitat (e.g., prey base). Such control measures, monitoring requirements, and reporting requirements may include measures or requirements identified by an appropriate Field Office of the U.S. Fish and Wildlife Service and/or Regional Office of the National Marine Fisheries Service during the 60-day review period pursuant to section 17.H or the public notice and comment period pursuant to Chapter 522. Where established in the permit by the Department, the Owner or Operator must implement any such requirements.

**H. Interim BTA requirements.** An Owner or Operator of a facility may be subject to interim BTA requirements established by the Department in the permit on a site-specific basis.

**I. More stringent standards.** The Department must establish more stringent requirements as BTA if the Department determines that compliance with the applicable requirements of this section would not meet the requirements of applicable State law, including compliance with applicable water quality standards (including designated uses, criteria, and antidegradation requirements).

**J.** The Owner or Operator of a facility subject to this Chapter must:

(1) Submit and retain the permit application and supporting information as specified in section 14;

(2) Conduct compliance monitoring as specified in section 15; and

(3) Report information and data and keep records as specified in section 16.

**14.** **Application Requirements for Existing Facilities** [*Se*e 40 CFR § 125.95]

**A. Permit application submittal timeframe for existing facilities.**

(1) The Owner or Operator of an existing facility subject to this Chapter must submit to the Department the information required in the applicable provisions of section 18 when applying for a subsequent permit (consistent with the Owner or Operator’s duty to reapply pursuant to Chapter 521, section 4(d)).

(2) [Reserved]

(3) The Department may waive some or all of the information requirements of section 18 if the intake is located in a manmade lake or reservoir and the fisheries are stocked and managed by a State or Federal natural resources agency or the equivalent. If the manmade lake or reservoir contains State or Federally listed threatened and endangered species, or is designated critical habitat, such a waiver shall not be granted.

**B. Permit application submittal timeframe for new units.** For the Owner or Operator of any new unit at an existing facility subject to this Chapter:

(1) The Owner or Operator must submit the information required in section 18 for the new unit to the Department no later than 180 days before the planned commencement of cooling water withdrawals for the operation of the new unit. If the Owner or Operator has already submitted the required information in the previous permit application, the Owner or Operator may choose to submit an update to the required information.

(2) The Owner or Operator is encouraged to submit their permit applications well in advance of the 180-day requirement to avoid delay.

**C. Permit applications.** Once the Owner or Operator of a facility has submitted the studies specified in section 18 as part of a permit application, the Owner or Operator may in subsequent permit applications, request to reduce the information required, if conditions at the facility and in the water body remain substantially unchanged since the previous application, so long as the relevant previously submitted information remains representative of current source water, intake structure, cooling water system, and operating conditions. Any habitat designated as critical or species listed as threatened or endangered after issuance of the current permit whose range of habitat or designated critical habit includes waters where a facility intake is located constitutes potential for a substantial change that must be addressed by the Owner or Operator in subsequent permit applications, unless the facility received an exemption pursuant to 16 U.S.C. 1536(o) or a permit pursuant to 16 U.S.C. 1539(a) or there is no reasonable expectation of take. The Owner or Operator of a facility must submit its request for reduced cooling water intake structure and water body application information to the Department at least two years and six months prior to the expiration of its MEPDES permit. The Owner or Operator’s request must identify each element in this subsection that it determines has not substantially changed since the previous permit application and the basis for the determination. The Department has the discretion to accept or reject any part of the request.

**D.** The Department has the discretion to request additional information to supplement the permit application, including a request to inspect a facility.

**E. Permit application records.** The Owner or Operator of a facility must keep records of all submissions that are part of its permit application until the subsequent permit is issued to document compliance with the requirements of this section. If the Department approves a request for reduced permit application studies under section 14.A or C, the Owner or Operator of a facility must keep records of all submissions that are part of the previous permit application until the subsequent permit is issued.

**F.** In addition, in developing its permit application, the Owner or Operator of an existing facility or new unit at an existing facility must, based on readily available information at the time of the permit application, instead of the information required at section 18.D(6) of this Chapter, identify all Federally listed threatened and endangered species and/or designated critical habitat that are or may be present in the action area.

**G. Certification.** The Owner or Operator of a facility must certify that its permit application is true, accurate, and complete pursuant to Chapter 521, section 5.D.

**15.   Monitoring Requirements for Existing Facilities.** [*See* 40 CFR § 125.96]

**A. Monitoring requirements for impingement mortality for existing facilities.** The Department may establish monitoring requirements in addition to those specified at section 13.C, including, for example, biological monitoring, intake velocity and flow measurements. If the Department establishes such monitoring, the specific protocols will be determined by the Department.

**B. Monitoring requirements for entrainment for existing facilities.**Monitoring requirements for entrainment will be determined by the Department on a site-specific basis, as appropriate, to meet requirements under section 13.D.

**C. Additional monitoring requirements for existing facilities.** The Department may require additional monitoring for impingement or entrainment including, but not limited to, the following:

(1) The Department may require additional monitoring if there are changes in operating conditions at the facility or in the source water body that warrant a re-examination of the operational conditions identified in section 18.

(2) The Department may require additional monitoring for species not subject to the BTA requirements for impingement mortality in section 13.C. Such monitoring requirements will be determined by the Department on a site-specific basis.

**D. Monitoring requirements for new units at existing facilities.** Monitoring is required to demonstrate compliance with the requirements of section 13.E.

(1) The Department may establish monitoring requirements for impingement, impingement mortality, and entrainment of the commercial, recreational, and forage base fish and shellfish species identified in the Source Water Baseline Biological Characterization data required by section 18.D. Monitoring methods used must be consistent with those used for the Source Water Baseline Biological Characterization described in section 18.D. If the Department establishes such monitoring requirements, the frequency of monitoring and specific protocols will be determined by the Department.

(2) If the facility is subject to the requirements of section 13.E(1) or (2), the frequency of flow monitoring and velocity monitoring must be daily and must be representative of normal operating conditions. Flow monitoring must include measuring cooling water withdrawals, make-up water, and blowdown volume. The Department may require additional monitoring necessary to demonstrate compliance with section 13.E.

(3) If the facility is subject to the requirements of section 13.E(2), the Owner or Operator must monitor to demonstrate achievement of reductions commensurate with a closed-cycle recirculating system. The Owner or Operator must monitor entrainable organisms at a proximity to the intake that is representative of the entrainable organisms in the absence of the intake structure. The Owner or Operator must also monitor the latent entrainment mortality in front of the intake structure. Mortality after passing the cooling water intake structure must be counted as 100 percent mortality unless the Owner or Operator has demonstrated to the approval of the Department that the mortality for each species is less than 100 percent. Monitoring must be representative of the cooling water intake when the structure is in operation. In addition, sufficient samples must be collected to allow for calculation of annual average entrainment levels of all life stages of fish and shellfish. Specific monitoring protocols and frequency of monitoring will be determined by the Department. The Owner or Operator must follow the monitoring frequencies identified by the Department for at least two years after the initial permit issuance. After that time, the Department may approve a request for less frequent monitoring in the remaining years of the permit term and when a subsequent permit is reissued. The monitoring must measure the total count of entrainable organisms or density of organisms, unless the Department approves of a different metric for such measurements. In addition, the Owner or Operator must monitor the AIF for each intake. The AIF must be measured at the same time as the samples of entrainable organisms are collected. The Department may require additional monitoring necessary to demonstrate compliance with section 13.E.

(4) The Department may require additional monitoring for impingement or entrainment at the cooling water intake structure used by a new unit including, but not limited to, the following:

(i) The Department may require additional monitoring if there are changes in operating conditions at the facility or in the source water body that warrant a re-examination of the operational conditions identified in section 18.

(ii) The Department may require additional monitoring for species not subject to the BTA requirements for impingement mortality in section 13.C. Such monitoring requirements will be determined by the Department on a site-specific basis.

**E. Visual or remote inspections.**The Owner or Operator must either conduct visual inspections or employ remote monitoring devices during the period the cooling water intake structure is in operation. The Owner or Operator must conduct such inspections at least weekly to ensure that any technologies operated to comply with section 13 are maintained and operated to function as designed, including those installed to protect State or Federally listed threatened or endangered species or designated critical habitat. The Department may establish alternative procedures if this requirement is not feasible (e.g., an offshore intake, velocity cap, or during periods of inclement weather).

**F. Request for reduced monitoring.** For facilities that are subject to section 13.C(7) and where the facility’s cooling water intake structure does not directly or indirectly affect State or Federally listed threatened and endangered species, or designated critical habitat, the Owner or Operator of the facility may request the Department to reduce monitoring requirements after the first full permit term in which these monitoring requirements are implemented, on the condition that the results of the monitoring to date demonstrate that the Owner or Operator of the facility has consistently operated the intake as designed and is meeting the requirements of section 13.C.

**G. Additional monitoring related to State or Federally listed threatened and endangered species and designated critical habitat at existing facilities.**Where the Department requires additional measures to protect State or Federally listed threatened or endangered species or designated critical habitat pursuant to section 13.G, the Department will require monitoring associated with those measures.

**16.** **Record Keeping and Reporting Requirements for Existing Facilities.** The Owner or Operator of an existing facility subject to this Chapter is required to submit to the Department the following information. [*See* 40 CFR § 125.97]

**A. Monitoring reports.** Discharge Monitoring Reports (DMRs) and results of all monitoring, demonstrations, and other information required by the permit sufficient to determine compliance with the permit conditions and requirements established under section 13.

**B. Status reports.** Any reports required by the Department under section 13.

**C. Annual certification statement and report.** An annual certification statement signed by the responsible corporate officer as defined in Chapter 521 subject to the following:

(1) If the information contained in the previous year’s annual certification is still pertinent, the Owner or Operator may simply state as such in a letter to the Department and the letter, along with any applicable data submission requirements specified in this section, shall constitute the annual certification.

(2) If the Owner or Operator has substantially modified operation of any unit at the facility that impacts cooling water withdrawals or operation of the cooling water intake structures, the Owner or Operator must provide a summary of those changes in the report. In addition, the Owner or Operator must submit revisions to the information required by section 18 in the next permit application.

**D. Permit reporting records retention.** Records of all submissions that are part of the permit reporting requirements of this section must be retained until the subsequent permit is issued. In addition, the Department may require supplemental recordkeeping, such as compliance monitoring under section 15, supplemental data collection under section 18, and additional monitoring or data collection under section 14.

**E. Reporting.**The Department has the discretion to require additional reporting when necessary to establish permit compliance and may provide for periodic inspection of the facility. The Department may require additional reporting, including but not limited to the records required under section 16.D.

**F. Records of Department’s Determination of BTA for Entrainment.**All records supporting the Department’s Determination of BTA for Entrainment under section 17.F or G must be retained until such time as the Department revises the Determination of BTA for Entrainment in the permit.

**G. Additional reporting requirements related to State or Federally listed threatened and endangered species or designated critical habitat.** Where the Department requires additional measures to protect State or Federally listed threatened or endangered species or critical habitat pursuant to section 13.G, the Department shall require reporting associated with those measures.

**17.** **Application Processing Procedures for Existing Facilities** [*See* 40 CFR § 125.98]

**A. Permit application.** The Department must review the materials submitted by the applicant under section 18 for completeness pursuant to Chapter 521, section 4(e), at the time of the initial permit application and any application for a subsequent permit.

**B. Permitting requirements.** The requirements of this Chapter are implemented through a MEPDES permit. Based on the information submitted in the permit application, the Department must determine the requirements and conditions to include in the permit.

(1) Such permits, including permits with alternative requirements under paragraph B(7) of this section, must include the following language as a permit condition: “Nothing in this permit authorizes take for the purposes of a facility’s compliance with the Endangered Species Act.”

(2) At a minimum, the permit must include conditions to implement and ensure compliance with the impingement mortality standard in section 13.C and the entrainment standard in section 13.D, including any measures to protect State or Federally listed threatened and endangered species and designated critical habitat required by the Department. In addition, the permit must include conditions, management practices, and operational measures necessary to ensure proper operation of any technology used to comply with the impingement mortality standard in section 13.C and the entrainment standard in section 13.D. Pursuant to section 13.G, the permit may include additional control measures, monitoring requirements, and reporting requirements that are designed to minimize incidental take, reduce or remove more than minor detrimental effects to State or Federally listed species and designated critical habitat, or avoid jeopardizing State or Federally listed species or destroying or adversely modifying designated critical habitat (e.g., prey base). Such control measures, monitoring requirements, and reporting requirements may include measures or requirements identified by the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service during the 60-day review period pursuant to section 17.H or the public notice and comment period pursuant to Chapter 522, section 8. The Department may include additional permit requirements if:

(i) Based on information submitted to the Department by any fishery management agency or other relevant information, there are migratory or sport or commercial species subject to entrainment that may be directly or indirectly affected by the cooling water intake structure; or

(ii) It is determined by the Department, based on information submitted by any fishery management agencies or other relevant information, that operation of the facility, after meeting the entrainment standard of this section, would still result in undesirable cumulative stressors to State or Federally listed and proposed, threatened and endangered species, and designated and proposed critical habitat.

(3) At a minimum, the permit must require the permittee to monitor as required by sections 13 and 15.

(4) At a minimum, the permit must require the permittee to report and keep the records specified by section 16.

(5) [Reserved]

(6) [Reserved]

(7) For new units at existing facilities, the Department may establish alternative requirements if the data specific to the facility indicate that compliance with the requirements of section 13.E(1) or (2) for each new unit would result in compliance costs wholly out of proportion to the costs EPA considered in establishing the requirements at issue, or would result in significant adverse impacts on local air quality, significant adverse impacts on local water resources other than impingement or entrainment, or significant adverse impacts on local energy markets:

(i) The alternative requirements must achieve a level of performance as close as practicable to the requirements of section 13.E(1);

(ii) The alternative requirements must ensure compliance with this Chapter, other provisions of the Clean Water Act, and State law;

(iii) The burden is on the Owner or Operator of the facility requesting the alternative requirement to demonstrate that alternative requirements should be authorized for the new unit.

(8) The Department may require additional measures, such as seasonal deployment of barrier nets, to protect shellfish.

**C. Compliance schedule.** When the Department establishes a schedule of requirements under section 13.B, the schedule must provide for compliance with section 13.C and D as soon as practicable. When establishing a schedule for electric power generating facilities, the Department may consider measures to maintain adequate energy reliability and necessary grid reserve capacity during any facility outage. These may include establishing a staggered schedule for multiple facilities serving the same localities. The Department may confer with independent system operators and state public utility regulatory agencies when establishing a schedule for electric power generating facilities. The Department may determine that extenuating circumstances (e.g., lengthy scheduled outages, future production schedules) warrant establishing a different compliance date for any manufacturing facility.

**D. Supplemental Technologies and Monitoring.** The Department may require additional technologies for protection of fragile species and may require additional monitoring of species of fish and shellfish not already required under section 13.C. The Department may consider data submitted by other interested parties. The Department may also require additional study and monitoring if a threatened or endangered species has been identified in the vicinity of the intake.

**E. Impingement technology performance optimization study.**The Owner or Operator of a facility that chooses to comply with section 13.C(5) or (6) must demonstrate in its *impingement technology performance optimization study* that the operation of its impingement reduction technology has been optimized to minimize impingement mortality of non-fragile species. The Department may request further data collection and information as part of the *impingement technology performance optimization study,* including extending the study period beyond two years. The Department may also consider previously collected biological data and performance reviews as part of the study. The Department must include in the permit verifiable and enforceable permit conditions that ensure the modified traveling screens or other systems of technologies will perform as demonstrated. The Department may waive all or part of the *impingement technology performance optimization study* described in section 18.F after the first permit cycle wherein the permittee is found to be in compliance with section 13.C.

**F. Site-specific entrainment requirements.** The Department must establish site-specific requirements for entrainment after reviewing the information submitted under section 18 and section 14. These entrainment requirements must reflect the Department’s determination of the maximum reduction in entrainment warranted after consideration of factors relevant for determining the BTA at each facility. These entrainment requirements may also reflect any control measures to reduce entrainment of State or Federally listed threatened and endangered species and designated critical habitat (e.g., prey base). The Department may reject an otherwise available technology as a basis for entrainment requirements if the Department determines there are unacceptable adverse impacts including impingement, entrainment, or other adverse effects to State or Federally listed threatened or endangered species or designated critical habitat. Prior to any permit reissuance the Department must review the performance of the facility’s installed entrainment technology to determine whether it continues to meet the requirements of section 13.D.

(1) The Department must provide a written explanation of the proposed entrainment determination in the fact sheet for the proposed permit under Chapter 522, section 6. The written explanation must describe why the Department has rejected any entrainment control technologies or measures that perform better than the selected technologies or measures and must reflect consideration of all reasonable attempts to mitigate any adverse impacts of otherwise available better-performing entrainment technologies.

(2) The proposed determination in the fact sheet must be based on consideration of any additional information required by the Department pursuant to section 17.I and the following factors listed below. The weight given to each factor is within the Department’s discretion based upon the circumstances of each facility.

(i) Numbers and types of organisms entrained, including, specifically, the numbers and species (or lowest taxonomic classification possible) of State or Federally listed, threatened and endangered species, and designated critical habitat (e.g., prey base);

(ii) Impact of changes in particulate emissions or other pollutants associated with entrainment technologies;

(iii) Land availability inasmuch as it relates to the feasibility of entrainment technology;

(iv) Remaining useful plant life; and

(v) Quantified and qualitative social benefits and costs of available entrainment technologies when such information on both benefits and costs is of sufficient rigor to make a decision.

(3) The proposed determination in the fact sheet may be based on consideration of the following factors to the extent the applicant submitted information under section 18 on these factors:

(i) Entrainment impacts on the water body;

(ii) Thermal discharge impacts;

(iii) [Reserved]

(iv) Impacts on the reliability of energy delivery within the immediate area;

(v) Impacts on water consumption; and

(vi) Availability of process water, gray water, wastewater, reclaimed water, or other waters of appropriate quantity and quality for reuse as cooling water.

(4) If all technologies considered have social costs not justified by the social benefits, or have unacceptable adverse impacts that cannot be mitigated, the Department may determine that no additional control requirements are necessary beyond what the facility is already doing. The Department may reject an otherwise available technology as a BTA standard for entrainment if the social costs are not justified by the social benefits.

**G.** [Reserved]

**H.** The Department must transmit all permit applications for facilities subject to this Chapter to the appropriate Field Office of the U.S. Fish and Wildlife Service and/or Regional Office of the National Marine Fisheries Service upon receipt for a 60-day review prior to public notice of the draft or proposed permit. The Department shall provide the public notice and an opportunity to comment as required under Chapter 522, section 8, and must submit a copy of the fact sheet, the permit application (if any) and the draft permit (if any) to the appropriate Field Office of the U.S. Fish and Wildlife Service and/or Regional Office of the National Marine Fisheries Service. This includes notice of specific cooling water intake structure requirements, notice of the draft permit, and any specific information the Department has about threatened or endangered species and critical habitat that are or may be present in the action area, including any proposed control measures and monitoring and reporting requirements for such species and habitat.

**I. Additional information.** In implementing the Department’s responsibilities under the provisions of this Chapter, the Department is authorized to inspect the facility and to request additional information needed by the Department for determining permit conditions and requirements, including any additional information from the facility recommended by the Services upon review of the permit application under paragraph H of this section.

**J.** Nothing in this Chapter authorizes the take, as defined at 16 U.S.C. 1532(19), of threatened or endangered species of fish or wildlife. Such take is prohibited under the Endangered Species Act unless it is exempted pursuant to 16 U.S.C. 1536(o) or permitted pursuant to 16 U.S.C. 1539(a). Absent such exemption or permit, any facility operating under the authority of this Chapter must not take threatened or endangered wildlife.

**K.** The Department must submit at least annually to the appropriate EPA Regional Office facilities’ annual reports submitted pursuant to section 16.G, for compilation and transmittal to the Services.

**18.** **Application Requirements for New and Existing Facilities**. Any person who requires a MEPDES permit for a facility that has a cooling water intake structure shall submit the following information with the MEPDES permit application. [*See* 40 CFR § 122.21(r)]

**A.**

(1) *New facilities with new or modified cooling water intake structures.* New facilities with cooling water intake structures as defined in this Chapter must submit to the Department for review the information required under paragraphs B, C, and D (except D(9), (10), (11), and (12)) of this section and section 8 as part of the permit application.

(2) *Existing facilities.*

(a) *All existing facilities.* The Owner or Operator of an existing facility as defined in this Chapter must submit to the Department for review the information required under paragraphs B and C of this section and applicable provisions of paragraphs D, E, F, G, and H of this section.

(b) *Existing facilities greater than 125 MGD AIF.* In addition, the Owner or Operator of an existing facility that withdraws greater than 125 MGD AIF, as defined in section 4, of water for cooling purposes must also submit to the Department for review the information required under paragraphs I, J, K, L, and M of this section. If the Owner or Operator of an existing facility intends to comply with the BTA standards for entrainment using a closed-cycle recirculating system as defined in section 4, the Department may reduce or waive some or all of the information required under paragraphs I through M of this section.

(c) *Additional information.* The Owner or Operator of an existing facility must also submit such additional information as the Department determines is necessary pursuant to section 17.I.

(d) *New units at existing facilities.* The Owner or Operator of a new unit at an existing facility, as defined in this Chapter, must submit or update any information previously provided to the Department by submitting the information required under paragraphs B, C, E, H, and N of this section and applicable provisions of paragraphs D, F, and G of this section. Requests for and approvals of alternative requirements sought under section 13.E(2) or 17.B(7) must be submitted with the permit application.

(e) *New units at existing facilities not previously subject to this Chapter.* The Owner or Operator of a new unit as defined in section 4 at an existing facility not previously subject to this Chapter that increases the total capacity of the existing facility to more than 2 MGD DIF must submit the information required under paragraphs B, C, E and H of this section and applicable provisions of paragraphs D, F and G of this section at the time of the permit application for the new unit. Requests for alternative requirements under section 13.E(2) or section 17.B(7) must be submitted with the permit application. If the total capacity of the facility will increase to more than 125 MGD AIF, the Owner or Operator must also submit the information required in paragraphs I through M of this section. If the Owner or Operator of an existing facility intends to comply with the BTA standards for entrainment using a closed-cycle recirculating system as defined in section 4, the Department may reduce or waive some or all of the information required under paragraphs I through M of this section.

(f) If the Owner or Operator of an existing facility plans to retire the facility before the current permit expires, then the requirements of paragraphs A(2)(a), (b), (c), (d), and (e) of this section do not apply.

(g) If the Owner or Operator of an existing facility plans to retire the facility after the current permit expires but within one permit cycle, then the Department may waive the requirements of paragraphs G, I, J, K L, and M of this section pending a signed certification statement from the Owner or Operator of the facility specifying the last operating date of the facility.

(3)  *All facilities.* The Owner or Operator of any existing facility or new unit at any existing facility must also submit with its permit application all information received as a result of any communication with a Field Office of the U.S. Fish and Wildlife Service and/or Regional Office of the National Marine Fisheries Service.

**B.** **Source water physical data***.* These include:

(1) A narrative description and scaled drawings showing the physical configuration of all source water bodies used by the facility, including areal dimensions, depths, salinity and temperature regimes, and other documentation that supports the applicant’s determination of the water body type where each cooling water intake structure is located;

(2) Identification and characterization of the source water body’s hydrological and geomorphological features, as well as the methods used to conduct any physical studies to determine the intake’s area of influence within the water body and the results of such studies; and

(3) Locational maps.

**C. Cooling water intake structure data.** These include:

(1) A narrative description of the configuration of each of the cooling water intake structures and where it is located in the water body and in the water column;

(2) Latitude and longitude in degrees, minutes, and seconds for each of the cooling water intake structures;

(3) A narrative description of the operation of each of the cooling water intake structures, including design intake flows, daily hours of operation, number of days of the year in operation and seasonal changes, if applicable;

(4) A flow distribution and water balance diagram that includes all sources of water to the facility, recirculating flows, and discharges; and

(5) Engineering drawings of the cooling water intake structure.

**D. Source water baseline biological characterization data.** This information is required to characterize the biological community in the vicinity of the cooling water intake structure and to characterize the operation of the cooling water intake structures. The Department may also use this information in subsequent permit renewal proceedings to determine if the Design and Construction Technology Plan as required in section 8.(B)(4) should be revised. This supporting information must include existing data (if they are available). However, the applicant may supplement the data using newly conducted field studies if they choose to do so. The information submitted must include:

(1) A list of the data in paragraphs D(2) through (6) of this section that are not available and efforts made to identify sources of the data;

(2) A list of species (or relevant taxa) for all life stages and their relative abundance in the vicinity of the cooling water intake structure;

(3) Identification of the species and life stages that would be most susceptible to impingement and entrainment. Species evaluated should include the forage base as well as those most important in terms of significance to commercial and recreational fisheries;

(4) Identification and evaluation of the primary period of reproduction, larval recruitment, and period of peak abundance for relevant taxa;

(5) Data representative of the seasonal and daily activities (e.g., feeding and water column migration) of biological organisms in the vicinity of the cooling water intake structure;

(6) Identification of all threatened, endangered, and other protected species that might be susceptible to impingement and entrainment at the cooling water intake structures;

(7) Documentation of any public participation or consultation with Federal or State agencies undertaken in development of the plan; and

(8) If the applicant supplements the information requested in paragraph D(1) of this section with data collected using field studies, supporting documentation for the Source Water Baseline Biological Characterization must include a description of all methods and quality assurance procedures for sampling and data analysis including a description of the study area; taxonomic identification of sampled and evaluated biological assemblages (including all life stages of fish and shellfish); and sampling and data analysis methods. The sampling and/or data analysis methods used must be appropriate for a quantitative survey and based on consideration of methods used in other biological studies performed within the same source water body. The study area should include, at a minimum, the area of influence of the cooling water intake structure.

(9) [Reserved]

(10) For the Owner or Operator of an existing facility, identification of protective measures and stabilization activities that have been implemented, and a description of how these measures and activities affected the baseline water condition in the vicinity of the intake.

(11) For the Owner or Operator of an existing facility, a list of fragile species, as defined in this Chapter, at the facility. The applicant need only identify those species not already identified as fragile in this Chapter. New units at an existing facility are not required to resubmit this information if the cooling water withdrawals for the operation of the new unit are from an existing intake.

(12) For the Owner or Operator of an existing facility that has obtained incidental take exemption or authorization for its cooling water intake structure(s) from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, any information submitted in order to obtain that exemption or authorization may be used to satisfy the permit application information requirement of section 14.F if included in the application.

**E. Cooling water system data.** The Owner or Operator of an existing facility must submit the following information for each cooling water intake structure used or intended to be used:

(1) A narrative description of the operation of the cooling water system and its relationship to cooling water intake structures; the proportion of the design intake flow that is used in the system; the number of days of the year the cooling water system is in operation and seasonal changes in the operation of the system, if applicable; the proportion of design intake flow for contact cooling, non-contact cooling, and process uses; a distribution of water reuse to include cooling water reused as process water, process water reused for cooling, and the use of gray water for cooling; a description of reductions in total water withdrawals including cooling water intake flow reductions already achieved through minimized process water withdrawals; a description of any cooling water that is used in a manufacturing process either before or after it is used for cooling, including other recycled process water flows; the proportion of the source water body withdrawn (on a monthly basis);

(2) Design and engineering calculations prepared by a qualified professional and supporting data to support the description required by paragraph E(1) of this section; and

(3) Description of existing impingement and entrainment technologies or operational measures and a summary of their performance, including but not limited to reductions in impingement mortality and entrainment due to intake location and reductions in total water withdrawals and usage.

**F. Chosen method(s) of compliance with impingement mortality standard.** The Owner or Operator of the facility must identify the chosen compliance method for the entire facility; alternatively, the applicant must identify the chosen compliance method for each cooling water intake structure at its facility. The applicant must identify any intake structure for which a BTA determination for Impingement Mortality under section 13.C(11) or (12) is requested. In addition, the Owner or Operator that chooses to comply via section 13.C(5) or (6) must also submit an *impingement technology performance optimization study* as described below:

(1) If the applicant chooses to comply with section 13.C(5), the *impingement technology performance optimization study* must include two years of biological data collection measuring the reduction in impingement mortality achieved by the modified traveling screens as defined in this Chapter and demonstrating that the operation has been optimized to minimize impingement mortality. A complete description of the modified traveling screens and associated equipment must be included, including, for example, type of mesh, mesh slot size, pressure sprays and fish return mechanisms. A description of any biological data collection and data collection approach used in measuring impingement mortality must be included:

(a) Collecting data no less frequently than monthly. The Department may establish more frequent data collection;

(b) Biological data collection representative of the impingement and the impingement mortality at the intakes subject to this provision;

(c) A taxonomic identification to the lowest taxon possible of all organisms collected;

(d) The method in which naturally moribund organisms are identified and taken into account;

(e) The method in which mortality due to holding times is taken into account;

(f) If the facility entraps fish or shellfish, a count of entrapment, as defined in this Chapter, as impingement mortality; and

(g) The percent impingement mortality reflecting optimized operation of the modified traveling screen and all supporting calculations.

(2) If the applicant chooses to comply with section 13.C(6), the *impingement technology performance optimization study* must include biological data measuring the reduction in impingement mortality achieved by operation of the system of technologies, operational measures, and best management practices; and demonstrating that operation of the system has been optimized to minimize impingement mortality. This system of technologies, operational measures, and best management practices may include flow reductions, seasonal operation, unit closure, credit for intake location, and behavioral deterrent systems. The applicant must document how each system element contributes to the system’s performance. The applicant must include a minimum of two years of biological data measuring the reduction in impingement mortality achieved by the system. The applicant must also include a description of any sampling or data collection approach used in measuring the rate of impingement, impingement mortality, or flow reductions.

(a) *Rate of Impingement.* If the demonstration relies in part on a credit for reductions in the rate of impingement in the system, the applicant must provide an estimate of those reductions to be used as credit towards reducing impingement mortality, and any relevant supporting documentation, including previously collected biological data, performance reviews, and previously conducted performance studies not already submitted to the Department. The submission of studies more than 10 years old must include an explanation of why the data are still relevant and representative of conditions at the facility and explain how the data should be interpreted using the definitions of impingement and entrapment in this Chapter. The estimated reductions in rate of impingement must be based on a comparison of the system to a once-through cooling system with a traveling screen whose point of withdrawal from the surface water source is located at the shoreline of the source water body. For impoundments that are waters of the State in whole or in part, the facility’s rate of impingement must be measured at a location within the cooling water intake system that the Department deems appropriate. In addition, the applicant must include two years of biological data collection demonstrating the rate of impingement resulting from the system. For this demonstration, the applicant must collect data no less frequently than monthly. The Department may establish more frequent data collection.

(b) *Impingement Mortality.* If the demonstration relies in part on a credit for reductions in impingement mortality already obtained at the facility, the applicant must include two years of biological data collection demonstrating the level of impingement mortality the system is capable of achieving. The applicant must submit any relevant supporting documentation, including previously collected biological data, performance reviews, and previously conducted performance studies not already submitted to the Department. The applicant must provide a description of any sampling or data collection approach used in measuring impingement mortality. In addition, for this demonstration the applicant must:

(i) Collect data no less frequently than monthly. The Department may establish more frequent data collection;

(ii) Conduct biological data collection that is representative of the impingement and the impingement mortality at an intake subject to this provision. In addition, the applicant must describe how the location of the cooling water intake structure in the water body and the water column are accounted for in the points of data collection;

(iii) Include a taxonomic identification to the lowest taxon possible of all organisms to be collected;

(iv) Describe the method in which naturally moribund organisms are identified and taken into account;

(v) Describe the method in which mortality due to holding times is taken into account; and

(vi) If the facility entraps fish or shellfish, a count of the entrapment, as defined in this Chapter, as impingement mortality.

(c) *Flow reduction.* If the demonstration relies in part on flow reduction to reduce impingement, the applicant must include two years of intake flows, measured daily, as part of the demonstration, and describe the extent to which flow reductions are seasonal or intermittent. The applicant must document how the flow reduction results in reduced impingement. In addition, the applicant must describe how the reduction in impingement has reduced impingement mortality.

(d)  *Total system performance.* The applicant must document the percent impingement mortality reflecting optimized operation of the total system of technologies, operational measures, and best management practices and all supporting calculations. The total system performance is the combination of the impingement mortality performance reflected in section 18.F(2)(a), (b) and (c).

**G. Entrainment performance studies.** The Owner or Operator of an existing facility must submit any previously conducted studies or studies obtained from other facilities addressing technology efficacy, through-facility entrainment survival, and other entrainment studies. Any such submittals must include a description of each study, together with underlying data, and a summary of any conclusions or results. Any studies conducted at other locations must include an explanation as to why the data from other locations are relevant and representative of conditions at the facility. In the case of studies more than 10 years old, the applicant must explain why the data are still relevant and representative of conditions at the facility and explain how the data should be interpreted using the definition of entrainment in this Chapter.

**H. Operational status.** The Owner or Operator of an existing facility must submit a description of the operational status of each generating, production, or process unit that uses cooling water, including but not limited to:

(1) For power production or steam generation, descriptions of individual unit operating status including age of each unit; capacity utilization rate (or equivalent) for the previous 5 years, including any extended or unusual outages that significantly affect current data for flow, impingement, entrainment, or other factors, including identification of any operating unit with a capacity utilization rate of less than 8 percent averaged over a 24-month block contiguous period; and any major upgrades completed within the last 15 years, including but not limited to boiler replacement, condenser replacement, turbine replacement, or changes to fuel type;

(2) Descriptions of completed, approved, or scheduled uprates and Nuclear Regulatory Commission relicensing status of each unit at nuclear facilities;

(3) For process units at the facility that use cooling water other than for power production or steam generation, if the applicant intends to use reductions in flow or changes in operations to meet the requirements of section 13.C, descriptions of individual production processes and product lines; operating status including age of each line, seasonal operation, including any extended or unusual outages that significantly affect current data for flow, impingement, entrainment, or other factors; any major upgrades completed within the last 15 years; and plans or schedules for decommissioning or replacement of process units or production processes and product lines;

(4) For all manufacturing facilities, descriptions of current and future production schedules; and

(5) Descriptions of plans or schedules for any new units planned within the next 5 years.

**I. Entrainment characterization study.** The Owner or Operator of an existing facility that withdraws greater than 125 MGD AIF, where the withdrawal of cooling water is measured at a location within the cooling water intake structure that the Department deems appropriate, must develop for submission to the Department an *Entrainment Characterization Study* that includes a minimum of two years of entrainment data collection. The Entrainment Characterization Study must include the following components:

(1) *Entrainment Data Collection Method.* The study should identify and document the data collection period and frequency. The study should identify and document organisms collected to the lowest taxon possible of all life stages of fish and shellfish that are in the vicinity of the cooling water intake structure(s) and are susceptible to entrainment, including any organisms identified by the Department, and any species protected under Federal, or State law, including threatened or endangered species with a habitat range that includes waters in the vicinity of the cooling water intake structure. Biological data collection must be representative of the entrainment at the intakes subject to this provision. The Owner or Operator of the facility must identify and document how the location of the cooling water intake structure in the water body and the water column are accounted for by the data collection locations;

(2) *Biological Entrainment Characterization.* Characterization of all life stages of fish, shellfish, and any species protected under Federal, or State law (including threatened or endangered species), including a description of their abundance and their temporal and spatial characteristics in the vicinity of the cooling water intake structure(s), based on sufficient data to characterize annual, seasonal, and diel variations in entrainment, including but not limited to variations related to climate and weather differences, spawning, feeding, and water column migration. This characterization may include historical data that are representative of the current operation of the facility and of biological conditions at the site. Identification of all life stages of fish and shellfish must include identification of any surrogate species used, and identification of data representing both motile and non-motile life-stages of organisms;

(3) *Analysis and Supporting Documentation.* Documentation of the current entrainment of all life stages of fish, shellfish, and any species protected under Federal, or State law (including threatened or endangered species). The documentation may include historical data that are representative of the current operation of the facility and of biological conditions at the site. Entrainment data to support the facility’s calculations must be collected during periods of representative operational flows for the cooling water intake structure, and the flows associated with the data collection must be documented. The method used to determine latent mortality along with data for specific organism mortality or survival that is applied to other life-stages or species must be identified. The Owner or Operator of the facility must identify and document all assumptions and calculations used to determine the total entrainment for that facility together with all methods and quality assurance/quality control procedures for data collection and data analysis. The proposed data collection and data analysis methods must be appropriate for a quantitative survey.

**J. Comprehensive technical feasibility and cost evaluation study.** The Owner or Operator of an existing facility that withdraws greater than 125 MGD AIF must develop for submission to the Department an engineering study of the technical feasibility and incremental costs of candidate entrainment control technologies. In addition, the study must include the following:

(1) *Technical feasibility.* An evaluation of the technical feasibility of closed-cycle recirculating systems as defined in this Chapter, fine mesh screens with a mesh size of 2 millimeters or smaller, and water reuse or alternate sources of cooling water. In addition, this study must include:

(a) A description of all technologies and operational measures considered (including alternative designs of closed-cycle recirculating systems such as natural draft cooling towers, mechanical draft cooling towers, hybrid designs, and compact or multi-cell arrangements);

(b) A discussion of land availability, including an evaluation of adjacent land and acres potentially available due to generating unit retirements, production unit retirements, other buildings and equipment retirements, and potential for repurposing of areas devoted to ponds, coal piles, rail yards, transmission yards, and parking lots;

(c) A discussion of available sources of process water, gray water, wastewater, reclaimed water, or other waters of appropriate quantity and quality for use as some or all of the cooling water needs of the facility; and

(d) Documentation of factors other than cost that may make a candidate technology impractical or infeasible for further evaluation.

(2) *Other entrainment control technologies.* An evaluation of additional technologies for reducing entrainment may be required by the Department.

(3) *Cost evaluations.* The study must include engineering cost estimates of all technologies considered in paragraphs J(1) and (2) of this section. Facility costs must also be adjusted to estimate social costs. All costs must be presented as the net present value (NPV) and the corresponding annual value. Costs must be clearly labeled as compliance costs or social costs. The applicant must separately discuss facility level compliance costs and social costs, and provide documentation as follows:

(a) Compliance costs are calculated as after-tax, while social costs are calculated as pre-tax. Compliance costs include the facility’s administrative costs, including costs of permit application, while the social cost adjustment includes the Department’s administrative costs. Any outages, downtime, or other impacts to facility net revenue are included in compliance costs, while only that portion of lost net revenue that does not accrue to other producers can be included in social costs. Social costs must also be discounted using social discount rates of 3 percent and 7 percent. Assumptions regarding depreciation schedules, tax rates, interest rates, discount rates and related assumptions must be identified;

(b) Costs and explanation of any additional facility modifications necessary to support construction and operation of technologies considered in paragraphs J(1) and (2) of this section, including but not limited to relocation of existing buildings or equipment, reinforcement or upgrading of existing equipment, and additional construction and operating permits. Assumptions regarding depreciation schedules, interest rates, discount rates, useful life of the technology considered, and any related assumptions must be identified; and

(c) Costs and explanation for addressing any non-water quality environmental and other impacts identified in paragraph L of this section. The cost evaluation must include a discussion of all reasonable attempts to mitigate each of these impacts.

**K. Benefits valuation study.** The Owner or Operator of an existing facility that withdraws greater than 125 MGD AIF must develop for submission to the Department an evaluation of the benefits of the candidate entrainment reduction technologies and operational measures evaluated in paragraph J of this section, including using the Entrainment Characterization Study completed in paragraph I of this section. Each category of benefits must be described narratively, and when possible, benefits should be quantified in physical or biological units and monetized using appropriate economic valuation methods. The benefits valuation study must include, but is not limited to, the following elements:

(1) Incremental changes in the numbers of individual fish and shellfish lost due to impingement mortality and entrainment as defined in this Chapter, for all life stages of each exposed species;

(2) Description of basis for any estimates of changes in the stock sizes or harvest levels of commercial and recreational fish or shellfish species or forage fish species;

(3) Description of basis for any monetized values assigned to changes in the stock size or harvest levels of commercial and recreational fish or shellfish species, forage fish, and to any other ecosystem or non-use benefits;

(4) [Reserved]

(5) Discussion, with quantification and monetization, where possible, of any other benefits expected to accrue to the environment and local communities, including but not limited to improvements for mammals, birds, and other organisms and aquatic habitats;

(6) Discussion, with quantification and monetization, where possible, of any benefits expected to result from any reductions in thermal discharges from entrainment technologies.

**L. Non-water quality environmental and other impacts study.** The Owner or Operator of an existing facility that withdraws greater than 125 MGD AIF must develop for submission to the Department a detailed facility-specific discussion of the changes in non-water quality environmental and other impacts attributed to each technology and operational measure considered in paragraph J of this section, including both impacts increased and impacts decreased. The study must include the following:

(1) Estimates of changes to energy consumption, including but not limited to auxiliary power consumption and turbine backpressure energy penalty;

(2) Estimates of air pollutant emissions and of the human health and environmental impacts associated with such emissions;

(3) Estimates of changes in noise;

(4) A discussion of impacts to safety, including documentation of the potential for plumes, icing, and availability of emergency cooling water;

(5) A discussion of facility reliability, including but not limited to facility availability, production of steam, impacts to production based on process unit heating or cooling, and reliability due to cooling water availability;

(6) Significant changes in consumption of water, including a facility-specific comparison of the evaporative losses of both once-through cooling and closed-cycle recirculating systems, and documentation of impacts attributable to changes in water consumption; and

(7) A discussion of all reasonable attempts to mitigate each of these factors.

**M. Peer review.** If the applicant is required to submit studies under paragraphs J through L of this section, the applicant must conduct an external peer review of each report to be submitted with the permit application. The applicant must select peer reviewers and notify the Department in advance of the peer review. The Department may disapprove of a peer reviewer or require additional peer reviewers. The Department may confer with EPA, Federal and State fish and wildlife management agencies with responsibility for fish and wildlife potentially affected by the cooling water intake structure, independent system operators, and state public utility regulatory agencies, to determine which peer review comments must be addressed. The applicant must provide an explanation for any significant reviewer comments not accepted. Peer reviewers must have appropriate qualifications and their names and credentials must be included in the peer review report.

**N. New units.** The applicant must identify the chosen compliance method for the new unit. In addition, the Owner or Operator that selects the BTA standards for new units in section 13.E(2) as its route to compliance must submit information to demonstrate entrainment reductions equivalent to 90 percent or greater of the reduction that could be achieved through compliance with section 13.E(1). The demonstration must include the Entrainment Characterization Study at paragraph I of this section. In addition, if data specific to the facility indicate that compliance with the requirements of section 13 for each new unit would result in compliance costs wholly out of proportion to the costs EPA considered in establishing the requirements at issue, or would result in significant adverse impacts on local air quality, significant adverse impacts on local water resources other than impingement or entrainment, or significant adverse impacts on local energy markets, the applicant must submit all supporting data as part of paragraph N of this section. The Department may determine that additional data and information, including but not limited to monitoring, must be included as part of paragraph N of this section.

AUTHORITY: 38 MRSA §§ 341-H and 414-A(6)

APA EFFECTIVE DATE: February 20, 2024 – filing 2024-035

EFFECTIVE DATE: This rule will become effective upon the approval of the U.S. Environmental Protection Agency of related parts of the State’s application to administer the National Pollutant Discharge Elimination System program of the Federal Clean Water Act, pursuant to 40 CFR part 123. This approval is pending.