

ABBREVIATIONS AND ACRONYMS

AAP	aquatic animal production
ADEM	Alabama Department of Environmental Management
ADFG	Alaska Department of Fish and Game
AETF	Aquaculture Effluents Task Force (JSA)
AFS	American Fisheries Society
APHIS	Animal and Planet Health Inspection Service (USDA)
BAT	Best Available Technology Economically Achievable
BCT	Best Control Technology for Conventional Pollutants
BGD	bacterial gill disease
BMPs	best management practices
BOD	biochemical oxygen demand
BOD ₅	biochemical oxygen demand measured over a 5-day period
BPJ	best professional judgment
BPT	Best Practicable Control Technology
CAAP	concentrated aquatic animal production
CAPDET	Computer-Assisted Procedure for the Design and Evaluation of Wastewater Treatment
CBI	Confidential Business Information
C-BOD ₅	carbonaceous biochemical oxygen demand measured over a 5-day period
CCVD	channel catfish virus disease
CFR	Code of Federal Regulations
CITES	Convention on International Trade of Endangered Species of Wild Fauna and Flora
COD	chemical oxygen demand

CTSA	Center for Tropical and Subtropical Aquaculture
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DMR	Discharge Monitoring Report
DO	dissolved oxygen
ELGs	Effluent Limitations Guidelines
ERM	enteric redmouth
ERS	Economic Research Service (USDA)
ESC	enteric septicemia in catfish
FAO	Food and Agriculture Organization (United Nations)
FCR	feed conversion ratio
FDA	Food and Drug Administration
FDACS	Florida Department of Agriculture and Consumer Services
FDF	fundamentally different factor
FFS	full-flow settling
FR	Federal Register
FTE	full-time equivalent
HACCP	Hazard Analysis and Critical Control Points
HCG	human chorionic gonadotropin
ICR	Information Collection Request
IDEQ	Idaho Division of Environmental Quality
IHHN	infectious hypodermal and hematopoietic necrosis
INAD	investigational new animal drug
IPNV	infectious pancreatic necrosis virus
IRFA	Initial Regulatory Flexibility Analysis
ISA	infectious salmon anemia
JSA	Joint Subcommittee on Aquaculture
LTA	long-term average

LRP	low regulatory priority
MAS	motile aeromonas septicemia
MDA	Maryland Department of Agriculture
MEPA	Massachusetts Environmental Policy Act
ML	minimum limit
MPRSA	Marine Protection Research and Sanctuaries Act
NAHMS	National Animal Health Monitoring System
NAICS	North American Industry Classification System
NASAC	National Association of State Aquaculture Coordinators
NASS	National Agricultural Statistics Service (USDA)
NMFS	National Marine Fisheries Service (Department of Commerce)
NOAA	National Oceanic and Atmospheric Administration (Department of Commerce)
NODA	Notice of Data Availability
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service (USDA)
NRDC	Natural Resources Defense Council
NSPS	New Source Performance Standards
NSTC	National Science and Technology Council
NTTA	National Technology Transfer and Advancement Act
NTU	nephelometric turbidity units
NWPCAM	National Water Pollution Control Assessment Model
NWQI	non-water quality impact
OLS	offline settling
O&M	operation and maintenance
OMB	Office of Management and Budget
PCB	polychlorinated biphenyl
PCS	Permit Compliance System
PGD	proliferative gill disease

POC	Pollutants of Concern
POTW	publicly owned treatment works
PSES	Pretreatment Standards for Existing Sources
PSNS	Pretreatment Standards for New Sources
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
QZ	quiescent zone
R&D	Research and Development
RCRA	Resource Conservation and Recovery Act of 1976
RFA	Regulatory Flexibility Act
RHA	Rivers and Harbors Act
SAL	Special Activity License
SAP	Sampling and Analysis Procedures
SBA	Small Business Administration
SBAR	Small Business Advocacy Review Panel
SBREFA	Small Business Regulatory Enforcement Fairness Act of 1996
SCC	Sample Control Center
SEQR	State Environmental Quality Review
SER	Small Entity Representative
SIC	Standard Industrial Classification
SIU	Significant Industrial User
SPF	specific pathogen-free
SPR	specific pathogen-resistant
SRAC	Southern Regional Aquaculture Center
SS	settleable solids
TAN	total ammonia nitrogen
TBT	tributyltin
TCI	The Catfish Institute

TDS	total dissolved solids
TKN	total Kjeldahl nitrogen
TL	total length
TN	total nitrogen
TOC	total organic carbon
TP	total phosphorus
TS	total solids
TSS	total suspended solids
TSV	taura syndrome virus
TVS	total volatile solids
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey (Department of the Interior)
USFWS	United States Fish and Wildlife Service (Department of the Interior)
USTFA	United States Trout Farmer's Association
UV	ultraviolet
VDEQ	Virginia Department of Environmental Quality
VHS	viral hemorrhagic septicemia
WDF	Washington Department of Fisheries
WDOE	Washington Department of Ecology
WSSV	white spot syndrome virus
YHV	yellow head virus

GLOSSARY

Aeration: The process of bringing air into contact with a liquid by one or more of the following methods: (1) spraying the liquid into the air, (2) bubbling air through the liquid, and (3) agitating the liquid to promote absorption of oxygen through the air-liquid interface.

Aerobic: Having or occurring in the presence of free oxygen.

Agronomic rates: The land application of animal wastes at rates of application that provide the crop or forage growth with needed nutrients for optimum health and growth.

Algal bloom: Sudden spurts of algal growth, which can affect water quality adversely and indicate potentially hazardous changes in local water chemistry.

Aliquot: A measured portion of a sample taken for analysis. One or more aliquots make up a sample.

Anadromous: Describes fish born in freshwater, descending into the sea to grow to maturity, and then returning to spawn in freshwater rivers and streams.

Anaerobic: Characterized by the absence of molecular oxygen, or capable of living and growing in the absence of oxygen, such as *anaerobic bacteria*.

Analytes: Chemical constituents analyzed as part of the aquatic animal production industry sampling episodes.

Androgens: Hormones used to invert the sex of female fry.

Antifoulant: Substance used to retard the growth of marine organisms on an object placed in the underwater marine environment.

Aquaculture: The production of aquatic plants and animals under controlled or semicontrolled conditions.

Aquatic animal pathogen: An organism that can cause disease outbreaks in aquatic animals.

Aquatic animal production: The production of aquatic animals under controlled or semicontrolled conditions.

Baffle: A device (such as a plate, wall, or screen) to deflect, check, or regulate the flow of water in a raceway.

Benthic monitoring: Monitoring conducted to ensure that degradation is not occurring under or around net pens.

Best Available Technology Economically Achievable (BAT): Technology-based standard established by the Clean Water Act (CWA) as the most appropriate means available on a national basis for controlling the direct discharge of toxic and nonconventional pollutants to navigable waters. BAT effluent limitations guidelines, in general, represent the best existing performance of treatment technologies that are economically achievable within an industrial point source category or subcategory.

Best Control Technology for Conventional Pollutants (BCT): Technology-based standard for the discharge from existing industrial point sources of conventional pollutants including BOD, TSS, fecal coliform, pH, oil and grease. The BCT is established in light of a two-part “cost reasonableness” test, which compares the cost for an industry to reduce its pollutant discharge with the cost to a POTW for similar levels of reduction of a pollutant loading. The second test examines the cost-effectiveness of additional industrial treatment beyond BPT. EPA must find limits, which are reasonable under both tests before establishing them as BCT.

Best management practice (BMP): A practice or combination of practices found to be the most effective, practicable (including economic and institutional considerations) means of preventing or reducing the amount of pollution generated.

Best Practicable Control Technology Currently Available (BPT): The first level of technology-based standards established by the CWA to control pollutants discharged to waters of the United States. BPT effluent limitations guidelines are generally based on the average of the best existing performance by plants within an industrial category or subcategory.

Biochemical oxygen demand (BOD): An indirect measure of the concentration of biodegradable substances present in an aqueous solution. Determined by the amount of dissolved oxygen required for the aerobic degradation of the organic matter at 20 °C. BOD₅ refers to the oxygen demand for the initial 5 days of the degradation process.

Biocide: Products added to other materials (typically liquids) to protect the other material from biological infestation and growth. Examples are well drilling fluid additives, cooling tower algaecides, products called slimicides, etc. The size of the biological organism a biocide controls is usually limited to single cell organisms and microscopic multicell organisms.

Biomass: All of the living material in a given area.

Bivalves: Animals characterized by a soft body enclosed by two hard shells or valves. The valves are attached at a hinge and are held shut by a strong muscle.

Brackish water: Mixed fresh and salt water.

Broodstock: A sexually mature group of a cultured species maintained solely for the production of eggs.

Byssal threads: Strong threadlike material used by some mussels to attach to their surroundings.

Carotenoids: Yellow or red pigments found in animal fat and some plants.

Chemical: Any substance that is added to a concentrated aquatic animal production facility to maintain or restore water quality for aquatic animal production and that might be discharged to waters of the United States.

Chemical oxygen demand (COD): A measure of the oxygen equivalent of the portion of organic matter that can be oxidized by a strong chemical oxidizing agent. This measure gives a better estimate of the total oxygen demand (as compared to BOD).

Clean Water Act (CWA): The Clean Water Act is an act passed by the U.S. Congress to control water pollution. It was formerly referred to as the Federal Water Pollution Control Act of 1972 or Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500), 33 U.S.C. 1251 et. seq., as amended by: Public Law 96-483; Public Law 97-117; Public Laws 95-217, 97-117, 97-440, and 100-04.

Cohort: A group of like-species aquatic animals born in the same year.

Concentrated aquatic animal production (CAAP) facility: A hatchery, fish farm, or other facility that contains, grows, or holds aquatic animals in either of the following categories, or that the Director¹ designates as such on a case-by-case basis, and must apply for a National Pollutant Discharge Elimination System permit:

- A. Coldwater fish species or other coldwater aquatic animals including, but not limited to, the Salmonidae family of fish (e.g., trout and salmon) in ponds, raceways, or other similar structures that discharge at least 30 days per year but does not include (1) facilities that produce less than 9,090 harvest weight kilograms (approximately 20,000 pounds) of aquatic animals per year and (2) facilities that feed less than 2,272 kilograms (approximately 5,000 pounds) of food during the calendar month of maximum feeding.
- B. Warmwater fish species or other warmwater aquatic animals including, but not limited to, the Ameiuridae, Cetrachidae, and the Cyprinidae families of fish (e.g., respectively, catfish, sunfish, and minnows) in ponds, raceways, or similar structures that discharge at least 30 days per year, but does not include (1) closed ponds that discharge only during periods of excess runoff or (2) facilities that produce less than 45,454 harvest weight kilograms (approximately 100,000 pounds) of aquatic animals per year.

¹ The Regional Administrator or State Director, as the context requires, or an authorized representative. When there is no approved state program, and there is an EPA administered program, Director means the Regional Administrator. When there is an approved state program, "Director" normally means the State Director.

Confidential Business Information (CBI): Any information in any form received by EPA or its approved contractors from any person, firm, partnership, corporation, association, or local, state, or federal agency, or foreign government, that contains trade secrets or commercial or financial information; has been claimed as CBI by the person submitting it; and has not been determined to be non-CBI under the procedures in 40 CFR Part 2.

Consent decree: A legal document, approved by a judge, that formalizes an agreement reached between EPA and potentially responsible parties (PRPs) through which PRPs will conduct all or part of a cleanup action at a Superfund site, cease or correct actions or processes that are polluting the environment, or otherwise comply with EPA-initiated regulatory enforcement actions to resolve the contamination at the Superfund site involved. The consent decree describes the actions PRPs will take and may be subject to a public comment period.

Conventional pollutants: Pollutants typical of municipal sewage, and for which municipal secondary treatment plants are typically designed; defined by Federal Regulation [40 CFR 401.16] as BOD, TSS, fecal coliform bacteria, oil and grease, and pH.

Daily discharge: The discharge of a pollutant measured during any 24-hour period that reasonably represents a calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged during the day. For pollutants with limitations expressed in other units of measurement (e.g., concentration) the daily discharge is calculated as the average measurement of the pollutant throughout the day (40 CFR 122.2).

Denitrification: The chemical or biological reduction of nitrate or nitrite to gaseous nitrogen, either as molecular nitrogen (N₂) or as an oxide of nitrogen (N₂O).

Direct discharger: A facility that discharges or may discharge treated or untreated wastewaters into waters of the United States.

Dissolved oxygen (DO): Oxygen dissolved in water by diffusion from the atmosphere and through the release into the water as a by-product of photosynthesis in aquatic plants; a water quality parameter.

Drug: Any substance, including medicated feed, that is added to a production facility to maintain or restore animal health and that subsequently might be discharged to waters of the United States.

Effluent limitations guideline (ELGs): Under the Clean Water Act, section 502(11), any restriction, including schedules of compliance, established by a state or the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents that are discharged from point sources into navigable waters, the waters of the contiguous zone, or the ocean (Clean Water Act sections 301(b) and 304(b)).

End-of-pipe treatment practices: Technologies such as settling basins or microscreens that reduce discharge of pollutants after they have formed.

Escapement: The release of aquatic animals from a production facility to waters of the United States.

Eutrophication: A process in which the addition of nutrients (primarily nitrogen and phosphorus) to water bodies stimulates algal growth. This is a natural process, but it can be greatly accelerated by human activities.

Excess feed: Feed that is added to a production system, is not consumed, and is not expected to be consumed by the aquatic animals.

Existing source: For a categorical industrial user, any source of discharge, the construction or operation of which commenced prior to the publication of proposed categorical pretreatment standards under Section 307 of the Clean Water Act.

Facility: All contiguous property and equipment owned, operated, leased, or under the control of the same person or entity.

Feed conversion ratio (FCR): A measure of feeding efficiency that is calculated as the ratio of the weight of feed applied to the weight of the fish produced.

Finfish: A term used to delineate bony fishes from other aquaculture species such as crustaceans and molluscs.

Fingerling: Juvenile fish that are typically 2 to 6 inches long or weigh 2 to 60 pounds per 1,000 fish.

Floating or bottom aquaculture system: A system used for the production of molluscs and shellfish. The cultured species can be grown attached to or lodged in the substrate or suspended from strings or cages.

Flow-through system: A system designed for a continuous water flow to waters of the United States through chambers used to produce aquatic animals. Flow-through systems typically use either raceways or tank systems. Raceways are fed by nearby rivers or springs and are typically long, rectangular chambers at or below grade, constructed of earth, concrete, plastic, or metal. Tank systems are similarly fed and concentrate aquatic animals in circular or rectangular tanks above grade. The term does not include net pens.

Foodfish: Fish for human consumption, typically over 0.75 pound.

Forage crop: Crop planted to provide food for crawfish when the ponds are flooded in the fall; rice is a common forage crop.

Frequency factors: The regional compliance of animal feeding operations with best management practices associated with a nutrient management plan, facility upgrades, or strategies to reduce excess nutrients.

Fry: Young fish that are typically under 2 inches long or weigh less than 2 pounds per 1,000 fish.

Groundwater: Water in a saturated zone or stratum beneath the surface of land or water.

Herbivore: An animal that feeds on plants.

Indirect discharger: A facility that discharges or may discharge wastewaters into a publicly owned treatment works.

Loading density: The average stocking density of the culture species within the production system at maximum production levels.

Long-term average (LTA): For purposes of the effluent guidelines, average pollutant levels achieved over a period of time by a facility, subcategory, or technology option. LTAs were used in developing the effluent limitations guidelines and standards in the proposed regulation.

Maximum monthly discharge limitation: The highest allowable average of “daily discharges” over a calendar month, calculated as the sum of all “daily discharges” measured during the calendar month divided by the number of “daily discharges” measured during the month.

Microbial decomposition: The breakdown of complex molecules in either plant or animal matter by bacteria and fungi.

Minimum level: The level at which an analytical system gives recognizable signals and an acceptable calibration point.

National Pollutant Discharge Elimination System (NPDES) permit: A permit to discharge wastewater into waters of the United States issued under the National Pollutant Discharge Elimination System, authorized by section 402 of the Clean Water Act.

National Pollutant Discharge Elimination System (NPDES) program: The NPDES program authorized by sections 307, 318, 402, and 405 of the Clean Water Act. It applies to facilities that discharge wastewater directly to U.S. surface waters.

Navigable waters: Traditionally, waters sufficiently deep and wide for navigation by all, or specified vessels; such waters in the United States come under federal jurisdiction and are protected by certain provisions of the Clean Water Act.

Net pen system: A stationary, suspended, or floating system of nets or screens in open marine or estuarine waters of the United States. Net pen systems typically are located along a shore or pier or may be anchored and floating offshore. Net pens and cages rely on tides and currents to provide a continual supply of high-quality water to animals in production.

New Source Performance Standards (NSPS): Technology-based standards for facilities that qualify as new sources under 40 CFR 122.2 and 40 CFR 122.29. Standards consider that the new source facility has an opportunity to design operations to more effectively control pollutant discharges.

Nonconventional pollutants: Pollutants that are neither conventional pollutants nor priority pollutants listed at 40 CFR 401.15 and Part 423, Appendix A.

Nonnative aquatic animal species: An individual, group, or population of species found (1) to be outside its historical or native geographic range and (2) to threaten native aquatic biota determined and identified by the appropriate state authority or U.S. Fish and Wildlife Service. This term excludes species raised for stocking by public agencies.

Non-water quality environmental impacts: Deleterious aspects of control and treatment technologies applicable to point source category wastes, including, but not limited to, air pollution, noise, radiation, sludge, and solid waste generation, and energy used.

North American Industry Classification System (NAICS): System developed jointly by the United States, Canada, and Mexico to provide new comparability in statistics about business activity across North America.

Ocean ranching: The process of rearing smolts and releasing them into the wild (the ocean), from which they are later harvested.

Omnivore: An animal that feeds on both animal and vegetable substances.

Outfall: The mouth of the conduit drains and other conduits from which a facility effluent discharges into receiving waters.

Pass through: A discharge which exits the POTW into waters of the United States, or state of Washington, in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the city's NPDES permit including an increase in the magnitude or duration of a violation.

Pathogen: A predatory or parasitic organism present in water or aquatic animals that, when discharged to waters of the United States, threatens disease in aquatic animals or humans.

Pelagic: Of, relating to, or living or occurring in the open sea.

Permitting authority: The agency authorized to administer the National Pollutant Discharge Elimination System permitting program in a state or territory.

Phytoplankton: Microscopic plants that serve as the plant food base for other organisms (zooplankton and larger animals) that are then consumed by fish. Phytoplankton is often referred to as the base of the food chain.

Planktonic: Relating to, being, or characteristic of plankton, a wide variety of plant and animal organisms that float or drift freely in water.

Point source: Any discernible, confined, and discrete conveyance from which pollutants are or may be discharged. See Clean Water Act section 502(14).

Pollutant load: The amount of a specific pollutant in a wastewater stream measured in mass units (pounds, kilograms).

Pollutants of concern (POCs): Pollutants commonly found in concentrated aquatic animal production facilities wastewaters. Generally, a chemical is considered a POC if it is detected in untreated process wastewater at five times a baseline value in more than 10 percent of the samples.

Pond system: An impoundment of water used for the production of aquatic animals. Pond systems are the most widely used production system in the aquatic animal production industry.

Pretreatment standards for existing sources (PSES) of indirect discharges: Under section 307(b) of the Clean Water Act, standards applicable (for this rule) to indirect dischargers that commenced construction prior to promulgation of the final rule.

Pretreatment standards for new sources (PSNS): Under section 307(c) of the Clean Water Act, standards applicable to indirect dischargers that commence after promulgation of the final rule.

Protozoa: Unicellular organisms that live individually or in small groups. Many kinds of protozoa are harmful to aquaculture animals. In some aquaculture systems, parasitic protozoa are the most important disease agents.

Publicly owned treatment works (POTW): A treatment works as defined by section 212 of the Clean Water Act, which is owned by a state or municipality (as defined by section 502(4) of the Clean Water Act). This definition includes any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes, and other conveyances, only if they convey wastewater to a POTW. The term also means the municipality, as defined in section 502(4) of the Clean Water Act, that has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

Quiescent zones: Solids-collection zones placed at the end of a raceway tank to collect the settleable solids swept out of the fish-rearing area. They are the primary means for solids removal in flow-through raceways.

Raceways: Culture units in which water flows continuously, making a single pass through the unit before being discharged; these systems are also referred to as flow-through systems.

Resource Conservation and Recovery Act (RCRA) of 1976: (42 U.S.C. sections 6901 et seq.). RCRA regulates the generation, treatment, storage, disposal, or recycling of solid and hazardous wastes.

Recirculating system: A system that filters and reuses water in which aquatic animals are produced prior to discharge. Recirculating systems typically use tanks, biological or mechanical filtration, and mechanical support equipment to maintain high-quality water to produce aquatic animals.

Seine: A net with weights attached to the bottom and floats on the top that can be pulled from each end to enclose fish during harvest.

Settleable solids: Material heavy enough to sink to the bottom of a wastewater treatment tank.

Sludge: Settled sewage solids combined with varying amounts of water and dissolved materials that are removed from sewage by screening, sedimentation, chemical precipitation, or bacterial digestion.

Smolt: A young salmon ready for life in a saltwater environment.

Sole proprietorship: An unincorporated business owned by one person, who is entirely liable for all business debts. A sole proprietor files either IRS Schedule C (profit or loss from a business) or Schedule F (profit or loss from farming). This Schedule becomes part of the owner's Form 1040 (personal tax form).

Spawning ground: A specific site where fish lay their eggs.

Standard industrial classification (SIC): A numerical categorization system used by the U.S. Department of Commerce to catalogue economic activity. SIC codes refer to the products, or group of products, produced or distributed, or to services rendered by an operating establishment. SIC codes are used to group establishments by the economic activities in which they are engaged. SIC codes often denote a facility's primary, secondary, tertiary, etc. economic activities.

Stockers: Fish used for stocking public or private fishing areas that are typically more than 6 inches long or weigh 60 to 750 pounds per 1,000 fish.

Total dissolved solids (TDS): All material that passes the standard glass river filter; now called total filtrable residue. Term is used to reflect salinity.

Total Kjeldahl nitrogen (TKN): Water and wastewater analyte that indicates the sum of organic nitrogen and ammonia nitrogen in the matrix analyzed.

Total nitrogen: Sum of nitrate/nitrite and total Kjeldahl nitrogen.

Total organic carbon (TOC): The fraction of carbon covalently bound to organic molecules within a sample.

Total suspended solids (TSS): The weight of particles that are suspended in water. Suspended solids in water reduce light penetration in the water column, can clog the gills of fish and invertebrates, and are often associated with toxic contaminants because organics and metals tend to bind to particles. Differentiated from total dissolved solids by a standardized filtration process whereby the dissolved portion passes through the filter.

Total volatile solids (TVS): Those solids in water or other liquids that are lost on ignition of the dry solids at 550 °C.

Turbidity: A measure of light penetration in water. Produced by dissolved and suspended substances. The more dense these substances, the higher the turbidity.

Volatile compound: Any substance that evaporates readily.

Wastewater treatment: The processing of wastewater by physical, chemical, biological, or other means to remove specific pollutants from the wastewater stream, or to alter the physical or chemical state of specific pollutants in the wastewater stream. Treatment is performed for discharge of treated wastewater, recycle of treated wastewater to the same process that generated the wastewater, or reuse of the treated wastewater in another process.

Zooplankton: The animal portion of plankton, which makes up the primary and secondary food chains in most bodies of water and is generally passively floating, or weakly swimming, minute animal or plant life. Zooplankton generally feed on phytoplankton. In turn, zooplankton provide an important food source for larval fish and shrimp in aquaculture ponds.