NO._____
Court of Appeals, Division II Case No. 48267-3-II

SUPREME COURT OF THE STATE OF WASHINGTON

PUGET SOUNDKEEPER ALLIANCE,

Petitioner,

v.

STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY; and STATE OF WASHINGTON POLLUTION CONTROL HEARINGS BOARD,

Respondents.

PUGET SOUNDKEEPER ALLIANCE'S PETITION FOR DISCRETIONARY REVIEW

RICHARD A. SMITH, WSBA #21788
CLAIRE E. TONRY, WSBA #44497
Smith & Lowney, PLLC
2317 E. John St.
Seattle, WA 98112
(206) 860-2883
Attorneys for Petitioner Puget Soundkeeper Alliance

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Cases

Statutes and Rules

Other

I. IDENTITY OF PETITIONER

Petitioner is Puget Soundkeeper Alliance ("Soundkeeper"), petitioner in the Court of Appeals below, and appellant in the initial Pollution Control Hearings Board ("PCHB") appeal of the National Pollutant Discharge Elimination System ("NPDES") permit issued by respondent Department of Ecology ("Ecology") to discharger Seattle Iron & Metals ("SIM").

II. CITATION TO COURT OF APPEALS DECISION

Petitioner seeks review of the Court of Appeals, Division II, Unpublished Opinion, dated February 22, 2017. A copy of the Court's decision is included in the Appendix at A-1 (hereinafter, "Decision").

III. ISSUES PRESENTED FOR REVIEW

1. Does WAC 173-201A-260(3) allow the specification of EPA Method 1668C for compliance monitoring in NPDES permits to ensure against the discharge of total PCBs that would violate water quality standards as required by RCW 90.48.010 and RCW 90.48.520?

2. May Ecology issue an NPDES permit that authorizes discharges of total PCBs at concentrations up to 0.5 µg/L when total PCB discharge concentrations must be limited to 0.00017 µg/L to ensure compliance with water quality standards?

IV. STATEMENT OF THE CASE

A. PCB Contamination in the Lower Duwamish Waterway

The lowest 5.5 mile stretch of the Duwamish River and surrounding uplands, including the location of SIM and its discharges, constitutes the Lower Duwamish Waterway Superfund site ("LDW Site"). *Puget Soundkeeper Alliance v. Ecology and Seattle Iron & Metals Corp.*, PCHB No. 13-137c, Findings of Fact, Conclusions of Law and Order (July 23, 2015) ("PCHB Order") at 3.[1] Due largely to historic sources of pollution, the LDW Site – its sediments and the tissue of resident fish and shellfish – is dangerously contaminated with hazardous chemicals. *Id.* at 45 – 47. The ongoing Superfund cleanup comprises an EPA-led effort to identify and cleanup particularly contaminated areas of LDW Site sediment, and a multi-agency, Ecology-led effort to control present sources of contamination to avoid recontamination of cleanup areas. *Id.* at 5 – 6. The intent of the cleanup plan "is to reduce contaminant concentrations in sediments, surface water, and fish and shellfish tissue to the extent practicable, and to minimize reliance on fish and shellfish consumption advisories to reduce human exposure from ingestion of

[1] Copies of PCHB decisions cited in this Petition are included in the Appendix, along with relevant statutory provisions and select other cited materials.

contaminated resident fish and shellfish." *Id.* at 5. EPA estimates that the costs of the cleanup, to be borne by actors in both the private and public spheres, will reach well into the hundreds of millions of dollars. *City of Seattle v. Monsanto Company, et al.*, W.D. Wash. No. 16-cv-107-RSL, Plaintiff's Original Complaint (January 25, 2016) at 3 – 4.

The LDW Superfund cleanup focuses primarily on PCBs. PCHB Order at 4 – 6; *City of Seattle v. Monsanto Co.*, Case No. 16-cv-107-RSL, 2017 U.S. Dist. LEXIS 24957, *3 – 4 (W.D. Wash. Feb. 22, 2017). PCBs are polychlorinated biphenyls, a group of 209 manmade chlorinated organic chemicals ("congeners") that are highly toxic to humans and animals. *Hines v. CONRAIL*, 926 F.2d 262, 264 n.1 (3rd Cir. 1991). PCBs belong to a class of chemicals regulated as "PBTs," or persistent bioaccumulative toxics, also called "BCCs," or bioaccumulative chemicals of concern. WAC 173-333-310; 64 Fed. Reg. 58666, 58668 – 58671 (Oct. 29, 1999). Besides their high toxicity, PCBs persist in the environment, typically taking decades to degrade. WAC 173-333-100, -320. Due to their strong preference to bond to organic matter, PCBs bioaccumulate in animal tissue, and biomagnify (or bioconcentrate) as they are passed from prey to predator up the food chain. WAC 173-333-320; *Environmental Defense Fund, Inc. v. U.S. EPA*, 636 F.2d 1267, 1270 (D.C. Cir. 1980); PCHB Order at 4, 46.

Due to grossly elevated levels of PCBs found in tissue of animals taken from the LDW Site, the Washington Department of Health declared consumption of LDW Site-resident fish and shellfish to be a "*public health hazard*," and issued a formal advisory against eating these. PCHB Order at 4, 45.

B. State Water Pollution Statutes and Regulations Prohibit Discharges that Cause Violations of Water Quality Standards.

Congress enacted the Clean Water Act in 1972 ("CWA") with the sweeping goals of maintaining and restoring the "chemical, physical, and biological integrity" of the nation's waters, eliminating the discharge of pollutants, and providing for the protection of beneficial uses like fish and recreation. 33 U.S.C. § 1251(a); *Pronsolino v. Nastri*, 291 F.3d 1123, 1126 (9th Cir. 2002). The heart of the CWA is Section 301(a), which prohibits discharges without an NPDES permit (or other authorization appropriate in circumstances not relevant here). 33 U.S.C. § 1311(a); *Ass'n to Protect Hammersley, Eld, and Totten Inlets ("APHETI") v. Taylor Res.*, 299 F.3d 1007, 1009 (9th Cir. 2002). Among other federal requirements, NPDES permits must impose effluent limitations to ensure against resulting violations of water quality standards. 33 U.S.C. §§ 1311(b)(1)(C) and 1342(a) and (b); *Puget Soundkeeper Alliance v. Pollution Control Hearings Board*, 189 Wn.App. 127, 137 – 138 (2015).

Ecology has been delegated authority by the EPA to implement the NPDES permit program in Washington. *Puget Soundkeeper Alliance,* 189 Wn.App. at 138. With regard to state implementation of the NPDES, the CWA expressly allows states to adopt and enforce permit requirements that are more stringent than those mandated by federal law. 33 U.S.C. § 1370; *Chevron U.S.A., Inc. v. Hammond,* 726 F.2d 483, 489 (9th Cir. 1984).

Washington's water pollution control law is intended to maintain the highest possible water quality standards, and to exercise state powers fully to this end. RCW 90.48.010. State policy calls for working cooperatively with the federal government "to extinguish the sources of water quality degradation, while at the same time preserving and vigorously exercising state powers to insure that present and future standards of water quality within the state shall be determined by [Washington's] citizenry …." *Id.* Washington statute "in no uncertain terms prohibit[s Ecology] from issuing permits that allow toxic discharges in violation of applicable standards." *Puget Soundkeeper Alliance,* 189 Wn.App. at 138; RCW 90.48.520. This statute is more stringent than the CWA's prohibition on toxic discharges, categorically stating that "[i]n no event shall the discharge of toxicants be allowed that would violate any

water quality standard, including toxicant standards ….” *Puget Soundkeeper Alliance*, 189 Wn.App. at 149; RCW 90.48.520.

The RCW 90.48.520 categorical prohibition on authorization of toxic discharges is implemented, in no uncertain terms, through several state NPDES permitting regulations:

- “Toxic substances shall not be introduced above natural background levels in waters of the state which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic toxicity …, or adversely affect public health as determined by [Ecology].” WAC 173-201A-240(1). “[Ecology] shall employ or require chemical testing, … as appropriate, to evaluate compliance with subsection (1) of this section ….” WAC 173-201A-240(2).

- “Waste discharge permits, whether issued pursuant to the [NPDES] or otherwise, must be conditioned so the discharges authorized will meet the water quality standards. No waste discharge permit can be issued that causes or contributes to a violation of water quality criteria, except as provided for in this chapter.” WAC 173-201A-510(1).

- “Permits must be modified by [Ecology] when it is determined that the discharge causes or contributes to a violation of water quality standards.” WAC 173-201A-510(1)(b).

- "Any permit issued by [Ecology] shall apply and insure compliance with all of the following, whenever applicable: … Any more stringent limitation, including those necessary to [] [m]eet water quality standards … established pursuant to any state law or regulation under authority preserved to the state by [33 U.S.C. § 1370]." WAC 173-220-130(1)(b)(i).

C. The PCHB Required a PCB Limit of 0.00017 µg/L to Protect Water Quality but Allowed Compliance to be Determined by a Lab Method Capable of Quantifying PCBs Only to 0.5 µg/L

Soundkeeper appealed the SIM NPDES permit before the PCHB. The PCHB Order, issued after a four-day evidentiary hearing, rejects the establishment of a mixing zone and the consideration of dilution in the derivation of numeric effluent limitations for total PCBs in discharges to the LDW Site authorized by the SIM NPDES permit. PCHB Order at 45 – 49. In concluding that total PCB discharge concentrations must be limited to the applicable water quality criterion of 0.00017 µg/L, the PCHB considered the grossly elevated PCBs in Duwamish River sediments and fish tissue, the fish consumption advisory, the LDW Site Superfund cleanup effort, abundant PCBs found in dirt around SIM's facility, and that SIM is a potential source of LDW site recontamination because "PCBs are found in the types of materials processed by SIM." PCHB

Order at 45 – 47. The PCHB disallowed the use of the mixing zone exception to the mandate for strict compliance with water quality standards because Ecology could not, as required by WAC 173-201A-400(4), present evidence clearly indicating that a mixing zone for SIM's discharge of PCBs to the LDW Site "would not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem, or adversely affect public health as determined by the department." *Id.* at 46 – 47. Furthermore, the PCHB found that the granting of a mixing zone to SIM for PCBs is "counterproductive" to the LDW Site source control efforts intended to stop the PCB recontamination of sediments that Ecology leads as part of the LDW Site Superfund cleanup. *Id.* at 47.

The PCHB, in other words, rejected the SIM NPDES permit total PCB effluent limit of 0.0051 µg/L as inadequately protective of water quality, finding that discharge concentrations must be capped at 0.00017 µg/L to ensure against violations of applicable water quality standards for PCBs and frustration of the LDW Site cleanup effort. *Id.* at 10 and 47.

The PCHB, however, rejected Soundkeeper's argument to disallow compliance with this total PCB effluent limitation to be determined by the use of laboratory analysis Method 608, which is capable of quantifying

PCBs down only to this method's practical quantitation level ("PQL") of 0.5 µg/L, orders of magnitude higher than the requisite numeric effluent limitation of 0.00017 µg/L. When an effluent limitation is less than the PQL of the analytical method required, the effluent limit effectively becomes the method's PQL. PCHB Order at 26. While recognizing the availability of more precise laboratory methods, including EPA Method 1668C, the most recently developed and most sensitive method available that provides a PQL as low as 0.000022 µg/L, the PCHB held that WAC 173-201A-260(3)(h) requires Ecology to specify compliance monitoring by Method 608 because it is the only PCB analysis method identified by EPA regulation at 40 C.F.R. § 136. PCHB Order at 34; Decision at 13.

D. The Court of Appeals Upheld the PCHB's Ruling

Soundkeeper appealed the PCHB Order, and the Court of Appeals, Division II, granted direct review. The court upheld the PCHB Order, holding that EPA Method 1668C is not a "superseding method published" under WAC 173-201A-260(h), and is thus not available for inclusion in SIM's NPDES permit.[2] The court also rejected Soundkeeper's argument that an NPDES permit authorizing SIM to use Method 608 and its PQL of

[2] The Court of Appeals agreed with Soundkeeper on a second issue and reversed the PCHB Order on the adequacy of numeric effluent limitations for copper and zinc concentrations in SIM's untreated stormwater discharge. Decision at 19-20.

0.5 µg/L to determine compliance with an effluent limitation of 0.00017 µg/L total PCBs cannot be issued under state law, RCW 90.48.520, and implementing regulations.

Soundkeeper timely seeks discretionary review of the Decision.

V. ARGUMENT

The Supreme Court should grant this petition for review because it involves issues of substantial public interest that the Court should determine and because the Decision is in conflict with the published decision of the Court of Appeals in *Puget Soundkeeper Alliance v. Pollution Control Hearings Board*, 189 Wn.App. 127 (2015). RAP 13.4(b)(2) and (4).

A. This Petition Involves Issues of Substantial Public Interest That the Court Should Determine

1. The Decision threatens the public interest in the LDW Site Superfund cleanup.

As the PCHB found, setting the allowable concentration of total PCBs in SIM's discharge to the LDW Site at levels higher than the applicable water quality standard of 0.00017 µg/L is "counterproductive" to Ecology-led source control efforts to prevent LDW Site recontamination, and invalid under the state water pollution control law. PCHB Order at 47. Soundkeeper respectfully asserts that it is thus

nonsensical to defer to Ecology's narrow interpretation of WAC 173-201A-260(3)(h), to conclude that the agency must issue SIM's NPDES permit specifying PCB compliance monitoring by Method 608, thereby increasing the effective total PCB limit to 0.5 µg/L, a level nearly three thousand times higher than the maximum concentration deemed safe and allowable. The issue presented by this petition should be decided by the Court to ensure that state law is properly implemented to prevent the recontamination of a major Superfund site within the City of Seattle with persistent bioaccumulative toxic PCBs that threaten human and environmental health.

According to the Washington Department of Health, the LDW Site is a public health hazard due to very elevated PCB concentrations in its resident fish. PCHB Order at 4. LDW Site Superfund cleanup efforts have been underway since 2001, and EPA's 2014 Superfund Record of Decision requires public and private responsible parties to spend hundreds of millions of dollars to dredge and cap PCB-contaminated locations in the river. PCHB Order at 3 – 5; *City of Seattle*, W.D. Wash. No. 16-107RSL, Plaintiff's Original Complaint (January 25, 2016) at 3 - 4. For instance, as part of the Superfund cleanup and source control effort, the City of Seattle will be constructing a stormwater treatment plant to remove PCBs from a small fraction of stormwater discharges to the LDW Site at a cost

estimated to be nearly $27 million, and expects other costs in addition as a result of its Superfund liability. *City of Seattle,* W.D. Wash. No. 16-107RSL, Plaintiff's Original Complaint (January 25, 2016) at 3 – 4. The Decision permits SIM to generate and add to the LDW Site effluent concentrations up to 0.5 µg/L total PCBs, rather than disallowing the permit or mandating the use of EPA Method 1668C, with its ability to quantify total PCBs to 0.000022 µg/L and so make effective, rather than merely nominal, the 0.00017 µg/L limit found necessary under state law. This presents an issue of substantial public interest in relation to the goals and potential for success of the LDW Site Superfund cleanup.

2. Implementation of Washington's Water Pollution Control Act with regard to toxic pollutants is of substantial public interest.

State law provides a categorical prohibition on authorization of toxic discharges that is more stringent than mandates of the federal CWA. *Puget Soundkeeper Alliance*, 189 Wn.App. at 149. "In no event shall the discharge of toxicants be allowed that would violate any water quality standard, including toxicant standards, sediment criteria, and dilution zone criteria." RCW 90.48.520. The key issue in this case – whether Ecology may issue an NPDES permit that allows total PCB discharges of up to 0.5 µg/L when discharges must be limited to a level nearly three thousand

times lower to avoid such violation of applicable water quality standards – goes directly to the meaning and effect of this bedrock provision of State water pollution control law. There are very few court decisions, published or unpublished, concerning the RCW 90.48.520 toxic discharge prohibition and the State's implementing regulations. This petition squarely presents an important issue about the meaning of this statutory provision in a case with a well-developed set of undisputed facts.

3. The role of substantive State standards in the administration of federally-delegated environmental regulatory programs under a cooperative federal-state scheme is of substantial public interest.

In this case, the PCHB and appeals court essentially allowed Ecology to blindly defer to EPA's apparently arbitrary requirement for use of an inadequate PCB compliance monitoring method by narrowly reading WAC 173-201A-260(3)(h) without consideration of a substantive state statutory mandate and despite competing regulatory requirements designed to implement that mandate. Decision at 11 – 15. The NPDES permit program established by the CWA is one of cooperative federalism designed to preserve the State's authority to impose its own requirements more stringent than federal ones. *Aminoil U. S. A., Inc. v. California State Water Resources Control Bd*., 674 F.2d 1227, 1229 – 1230 (9th Cir.

1982); 33 U.S.C. § 1370; WAC 173-220-130(1)(b)(i). State law establishes a policy of working with the federal government in a "joint effort to extinguish the sources of water quality degradation, while at the same time preserving and vigorously exercising state powers to insure that present and future standards of water quality within the state shall be determined by the citizenry, through and by the efforts of state government, of the state of Washington." RCW 90.48.010; *see also* WAC 173-220-130(1)(b)(i). The meaning and implementation of this policy is at stake in this case. If the Decision is allowed to stand, this policy amounts to empty words since Ecology need consider nothing more than the floor EPA sets for stringency of controls on toxic pollution discharges. If the Decision is allowed to stand, the toxic discharge prohibition of State law is rendered toothless, despite being considered more stringent than the federal CWA prohibition. RCW 90.48.520; *Puget Soundkeeper Alliance*, 189 Wn.App. at 149.

The importance of state substantive standards in cooperative federalism arrangements for environmental regulation extends well beyond the NPDES permit program under the CWA. The State is engaged in a number of environmental regulatory systems under similar cooperative federalism schemes in which the State has or may establish substantive standards more stringent than federal ones. These include

Clean Air Act programs under 42 U.S.C. § 7401 et seq. and RCW Ch. 70.94 (*see, e.g.*, WAC 173-401-100), solid and hazardous waste regulation under the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 *et seq.*, and RCW Ch. 70.105 (*see, e.g.*, WAC 173-303-010 and WAC 173-351-010), Coastal Zone Management Act programs under 16 U.S.C. § 1451, *et seq.*, and RCW Ch. 90.58 (*see, e.g.*, WAC 173-27-060), Safe Drinking Water Act programs under 42 U.S.C. 300f, *et seq*., and RCW Ch. 70.119A (*see, e.g.*, WAC 246-290-001), and Federal Insecticide, Fungicide, and Rodenticide Act programs under 7 U.S.C. § 136, *et seq.*, and RCW Chs. 17.21 and 15.58 (administered by Washington State Department of Agriculture).

Soundkeeper submits that the current national political climate and recent leadership changes at EPA make the implementation of substantive state standards providing greater environmental protection than federal requirements under the CWA and other cooperative federalism schemes more important than ever. Fundamental questions about implementation of such a standard – RCW 90.48.520's toxic discharge prohibition – are directly presented by this petition for review.

B. The Decision Conflicts with *Puget Soundkeeper Alliance v. Pollution Control Hearings Board*, 189 Wn.App. 127 (2015)

The challenged Decision interprets the toxic discharge prohibition of RCW 90.48.520 and its implementing regulations in such a fundamentally different manner than the court did in *Puget Soundkeeper Alliance* that this difference amounts to a conflict that should be addressed by the Supreme Court.

In *Puget Soundkeeper Alliance*, the court construed the RCW 90.48.520 toxic discharge prohibition in the context of an NPDES permit's whole effluent toxicity ("WET") limitations imposed under WAC Ch. 173-205. 189 Wn.App. at 137 – 141. In determining the operation of the WET regulations at issue, the court stressed the categorical nature of the RCW 90.48.520 toxic discharge prohibition and its greater stringency relative to federal CWA standards. *Id* at 149. The court examined the manifestations of the State statutory prohibition in the State's NPDES permitting regulations to aid interpretation; noting that WAC 173-220-150(1)(c) provides that "each issued [NPDES] permit shall require that … [a]ny discharge of any pollutant … at a level in excess of that identified and authorized by the permit shall constitute a violation of the terms and conditions of the permit," that WAC 173-201A-240(1) prohibits the introduction of toxic substances above natural levels that have the

potential to adversely affect characteristic water uses or public health, or cause toxicity, and that WAC 173-201A-240(2) mandates the imposition on permittees of chemical testing requirements appropriate to evaluate compliance with the -240(1) standard. *Id* at 138 - 139, 143, 146. The court held that Ecology's interpretation of its rules and statutes must be guided by the environmental trusteeship duties imposed on Ecology in particular by the substantive provisions of the State Environmental Policy Act, RCW Ch. 43.21C. *Id* at 148. And, the court strongly admonished Ecology that "[a]llowing violations of water quality standards, especially for the convenience of permittees and regulators does not provide a rational basis for disregarding the plain language of [Ecology's] rules and is an abdication of its responsibility to implement those rules." *Id*.

In contrast and conflictingly, the Decision allows violations of water quality standards so that Ecology can simply defer to EPA's default and inadequate compliance monitoring method, rather than seeking or requiring approval for compliance monitoring use of EPA Method 1668C, or, alternatively, denying SIM's permit application. Decision at 12 – 15. The Decision cites the *Puget Soundkeeper Alliance* opinion, the RCW 90.48.520 prohibition, and bluntly worded state regulations that implement it, before concluding, with virtually no analysis or reasoning, that Ecology's narrow reading of WAC 173-201A-260(3)(h) warrants

deference and requires Ecology to determine compliance with total PCB effluent limitations in SIM's NPDES permit using only the manifestly inadequate Method 608 because that is the only PCB analysis method included in EPA's list of approved methods. Decision at 7 – 9 and 12 – 15. The Decision's preference for Ecology's narrow interpretation of WAC 173-201A-260(3)(h) over the applicable rules implementing the RCW 90.48.520 prohibition is impossible to square with the analysis and conclusion of *Puget Soundkeeper Alliance.* These RCW 90.48.520-implementing rules include not only those cited by *Puget Soundkeeper Alliance* and identified above, but others mentioned in passing by the Decision, such as WAC 173-220-130(1)(b)(i) (providing that any NPDES permit shall apply and ensure compliance with limitations necessary "[m]eet water quality standards … pursuant to any state law or regulation") and WAC 173-201A-510(1) (NPDES permits "must be conditioned so the discharge authorized will meet the water quality standards" and that no permit can be issued that "causes or contributes to a violation of water quality criteria"). *Id* at 8. The Decision provides only the most scant reasoning to support its deference to Ecology's hand-tying decision to insist that – because of EPA's inaction in adding modern, appropriate EPA Method 1668C to its approved methods list – it can do nothing but issue SIM's NPDES with an effective total PCB effluent limit

orders of magnitude above the safe levels categorically demanded by RCW 90.48.520, WAC 173-201A-240, and -510(1), and WAC 173-220-130(1)(b)(i), and -150(1)(c). *Id* at 12 – 15.

Soundkeeper submits that the categorical prohibition of RCW 90.48.520 and its implementing regulations are of paramount importance in the State law scheme to "preserve and vigorously exercis[e] state powers to insure that present and future standards of water quality within the state shall be determined by the citizenry, through and by the efforts of state government, of the state of Washington." RCW 90.48.010. And, Soundkeeper submits, the Decision cannot be reconciled with the 2015 published *Puget Soundkeeper Alliance* decision holding Ecology to implementation of its NPDES permitting regulations in strict adherence to the RCW 90.48.520 prohibition and the letter of the rules giving it effect.

VI. CONCLUSION

For the foregoing reasons, Soundkeeper respectfully requests that this Court grant its motion for discretionary review.

Respectfully submitted this 24th day of March, 2017.

Richard A. Smith, WSBA #21788
Claire E. Tonry, WSBA #44497
Smith & Lowney, PLLC
2317 E. John St., Seattle, WA 98112
(206) 860-2883

DECLARATION OF SERVICE

I declare that on March 24, 2017, I served a true and correct copy of the foregoing *Puget Soundkeeper Alliance's Petition for Discretionary Review* on the following via email and U.S. mail:

Attorneys for Respondent Department of Ecology
Phyllis J. Barney, Assistant Attorney General
P.O. Box 40117
Olympia, WA 98504-0117
PhyllisB@atg.wa.gov

Attorneys for Pollution Control Hearings Board
Dionne M. Padilla-Huddleston, Assistant Attorney General
P.O. Box 40110
Olympia, WA 98504-0110
DionneP@atg.wa.gov

Attorneys for Seattle Iron & Metals, Corp.
Stephen R. Parkinson
Joyce Ziker Parkinson, PLLC
1601 5th Ave., Ste. 2040
Seattle, WA 98101-1627
sparkinson@jzplaw.com, jstevens@jzplaw.com

I declare under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct. Executed this 24th day of March, 2017, at Seattle, Washington.

Kai McDavid, Litigation Assistant

Filed
Washington State
Court of Appeals
Division Two

February 22, 2017

IN THE COURT OF APPEALS OF THE STATE OF WASHINGTON

DIVISION II

PUGET SOUNDKEEPER ALLIANCE, Appellant, v. STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY; and STATE OF WASHINGTON POLLUTION CONTROL HEARINGS BOARD, Respondents.	No. 48267-3-II UNPUBLISHED OPINION

MAXA, A.C.J. – Puget Soundkeeper Alliance (Soundkeeper) appeals the decision of the Pollution Control Hearings Board (Board) to uphold in part a National Pollutant Discharge Elimination System (NPDES) permit issued by the Washington Department of Ecology (Ecology) to Seattle Iron and Metals (SIM) for SIM's wastewater and stormwater discharges into the Lower Duwamish Waterway. Soundkeeper challenges the permit provisions that (1) require discharges to be tested for polychlorinated biphenyls (PCBs)[1] using Method 608 instead of the more sensitive Method 1668C, and (2) establish limitations on copper and zinc levels in

[1] PCBs are a group of manmade chlorinated organic chemicals that contain multiple individual compounds ("congeners") and are highly toxic to humans and animals.

untreated stormwater discharges based on the benchmarks in Ecology's 2009 Industrial Stormwater General Permit (General Permit) instead of based on site-specific water quality standards for those substances.

We hold that (1) SIM's permit properly required the use of Method 608 for testing PCBs because we defer to Ecology's determination that Method 608 is the testing method approved by the United States Environmental Protection Agency (EPA) and allowed under Washington law; and (2) substantial evidence does not support the Board's conclusion that there was insufficient data to calculate site-specific water quality-based effluent limitations (WQBELs), and Washington law requires that SIM's discharges be subject to WQBELs instead of the less restrictive limitations based on the General Permit. Accordingly, we affirm in part and reverse in part the Board's decisions on the two challenged NPDES permit provisions. We remand to Ecology for revision of the effluent limitations for copper and zinc consistent with this opinion.

FACTS

SIM's Discharges into Lower Duwamish Waterway

SIM operates an auto shredding and metal recycling facility adjacent to the Lower Duwamish Waterway (LDW). The SIM facility is located in the LDW federal and state cleanup site, which includes the approximately 5.5 mile stretch of the Duwamish River that flows into Elliot Bay. The LDW is heavily contaminated because of major industrial activity in the area over the last 100 years. Ecology is the lead agency for source control at the LDW site.

SIM's operations produce two types of water that must be discharged from the facility. A mix of wastewater from SIM's operations and some stormwater (referred to as "outfall 001") is collected and treated before discharge. Stormwater runoff from rooftops and parking lots

(referred to as "outfall 002") is not treated before discharge. SIM discharges both the treated wastewater and the untreated stormwater into the LDW. SIM's discharges into the LDW are recognized as a possible source of contaminants in the LDW sediments.

NPDES Permit

Ecology first issued an NPDES permit specific to the SIM site in 2007. The 2007 permit imposed WQBELs for SIM's treated discharges from outfall 001, with numeric effluent limits for cooper, zinc, total PCBs, and other pollutants. That permit did not regulate SIM's discharge of untreated stormwater from outfall 002.

On September 16, 2013, Ecology issued an NPDES waste discharge permit to SIM relating to the discharges of both outfall 001 and outfall 002 into the LDW.[2] The permit imposed daily limitations for PCBs, copper, zinc, and other contaminants at both outfalls.

Regarding PCBs, the permit imposed daily limitations of 0.0089 micrograms per liter (µg/L) for outfall 001 discharges. That limitation was based on the PCB human health criteria of 0.00017 µg/L adjusted for a dilution factor for the "mixing zone," the area surrounding the discharge point where wastewater mixes with receiving water.[3] The permit stated that Method 8082A would be used to test PCB levels in outfall 001.[4]

[2] The permit was first issued in 2007, but NPDES permits expire after five years and must be reissued. On August 26, 2014, before the Board's review, Ecology modified certain portions of the permit. The Board reviewed the permit as modified, but still referred to it as the "2013 permit" in its ruling.

[3] Pollutant concentrations within mixing zones may exceed the numeric standards without penalty on the theory that the pollutants will dilute quickly into the receiving water.

[4] Before the Board hearing, Ecology modified the 2013 NPDES permit for outfall 001 and replaced the requirement to use Method 8082A with the requirement to use Method 608.

For outfall 002, the permit imposed a daily PCB limitation of 0.25 µg/L, significantly higher than the PCB human health criteria used for outfall 001. This limitation was determined based on the detection limit of Method 608, the EPA-approved analytical test that Ecology required for outfall 002 PCB testing. The limitation level represented the minimum value that Method 608 could detect.

Regarding copper and zinc, Ecology's permit writer Ed Abassi calculated WQBELs for outfall 001 using historical data from the site. But for outfall 002, Ecology had only two data points because that discharge had not previously been regulated. Instead of calculating WQBELs, Abassi imported numeric benchmark values from the 2009 General Permit. The General Permit is an NPDES permit that Ecology issued to regulate more than 1,000 facilities statewide that discharge industrial stormwater. Using the General Permit benchmarks, Ecology imposed daily limitations of 14 µg/L for copper and 117 µg/L for zinc in outfall 002 discharges.

Board Appeal

On October 14, 2013, Soundkeeper filed a petition for Board review of certain portions of SIM's permit. Soundkeeper challenged (1) the inclusion of a mixing zone for PCBs, (2) the imposition of different PCB limits for outfall 001 and outfall 002, (3) the use of Method 608 for PCB testing instead of more sensitive methods, and (4) the imposition of limits on copper and zinc levels for outfall 002 based on General Permit benchmark values instead of site-specific WQBELs. The Board reviewed the permit, as modified by Ecology, during a four-day hearing in March 2015.

The Board entered extensive findings of fact and conclusions of law. The Board agreed with Soundkeeper that Ecology could not grant a mixing zone for PCBs because the LDW was

known to be saturated by PCBs and PCBs do not dilute easily. The Board also agreed with Soundkeeper that there was no basis for Ecology to impose higher PCB limits for outfall 002 than for outfall 001. The Board remanded the permit to Ecology for correction of the discharge limitations for PCBs.[5]

However, the Board rejected Soundkeeper's two other challenges. The Board ruled that the use of Method 608 for PCB testing was consistent with existing law because Method 608 was the only method approved by the EPA. The Board also ruled that Ecology's use of the General Permit's benchmark values to impose limitations on daily copper and zinc levels in outfall 002 discharges was reasonable and that those limitations were consistent with applicable law. The Board deferred to Ecology's determination that it lacked sufficient data to develop site-specific limitations.

APA Appeal

Soundkeeper petitioned for judicial review in the superior court, and this court granted its petition for direct review of the Board's order. Ruling Accepting Direct Review, *Puget Soundkeeper All. v. Dep't of Ecology*, No. 45609-3-II, at 3 (Wash. Ct. App. Dec. 22, 2015).

ANALYSIS

A. STANDARD OF REVIEW

The Administrative Procedures Act (APA) governs our review of agency decisions, which includes decisions by the Board. RCW 34.05.510; *Cornelius v. Dep't of Ecology*, 182

[5] The Board did not state what PCB limitation should be imposed on remand for outfall 002. Presumably, the limitation will be the same as for outfall 001: 0.00017 µg/L.

Wn.2d 574, 584-85, 344 P.3d 199 (2015). We can provide direct review of an environmental board's decision if that board files a certificate of appealability. RCW 34.05.518(1).

Under the APA, we may grant relief from the Board's order based on one of nine reasons listed in RCW 34.05.570(3), including that the order is (1) outside the agency's statutory authority, (2) based on an erroneous interpretation or application of the law, (3) unsupported by substantial evidence, (4) inconsistent with an agency rule, or (5) arbitrary and capricious. RCW 34.05.570(3)(b), (d), (e), (h), (i). The party challenging the Board's decision has the burden of demonstrating the invalidity of that decision. RCW 34.05.570(1)(a).

We review questions of law and an agency's application of the law to the facts de novo. *Cornelius*, 182 Wn.2d at 585. We give great weight to an agency's interpretation of a statute when the statute is ambiguous and falls within the agency's area of expertise, if the interpretation does not conflict with the statutory language or intent. *Puget Soundkeeper All. v. Pollution Control Hr'gs Bd.*, 189 Wn. App 127, 136, 356 P.3d 753 (2015). We show the same deference to an agency's interpretation of its own regulations. *Id.* More specifically, Ecology's interpretation of environmental statutes is entitled to great weight "[g]iven that the legislature designated Ecology as the agency to regulate the State's water resources." *Snohomish County v. Pollution Control Hr'gs Bd.*, ____ Wn.2d ____, 386 P.3d 1064, 1075 (2016). And the Board's review of Ecology's actions also is entitled to deference. *Id.*

However, we are not bound by an agency's interpretation of the law. *Puget Soundkeeper All.*, 189 Wn.2d at 136; *see also* RCW 34.05.570(3)(d). "[D]eference to an agency is inappropriate where the agency's interpretation conflicts with a statutory mandate." *Dep't of Labor & Indus. v. Granger*, 159 Wn.2d 752, 764, 153 P.3d 839 (2007).

B. LEGAL PRINCIPLES

1. General Water Quality Policy

The goal of the federal Clean Water Act (CWA)[6] is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" and attain water quality which provides for the protection and propagation of fish, shellfish, and wildlife. 33 U.S.C. § 1251(a)(2). The CWA expresses "the national policy that the discharge of toxic pollutants in toxic amounts be prohibited," 33 U.S.C. § 1251(a)(3), and states that "the discharge of any pollutant by any person shall be unlawful," except as authorized by specified statutory provisions. 33 U.S.C. § 1311(a).

The CWA prohibits any discharge of pollutants into the nation's waters unless the discharge is made according to the terms of an NPDES permit. 33 U.S.C. §§ 1311(a), 1342[7]. Congress authorized the EPA to delegate the NPDES permitting program to the states. 33 U.S.C. § 1342(b). The EPA delegated authority to Ecology to implement the NPDES permitting program in Washington. RCW 90.48.260(1). The legislature has recognized that Ecology has "[c]omplete authority to establish and administer" the program. RCW 90.48.260(1)(a); *Snohomish County*, 386 P.3d at 1067.

The Washington legislature also has adopted a water quality policy, which seeks to "maintain the highest possible standards to insure the purity of all waters of the state." RCW 90.48.010. And RCW 90.48.520 states, "In no event shall the discharge of toxicants be allowed

[6] The CWA's formal name is the Federal Water Pollution Control Act, 33 U.S.C. §§ 1251-1388.

[7] 33 U.S.C. § 1342 has been amended since the events of this case transpired. However, these amendments do not impact the statutory language relied on by this court. Accordingly, we do not include the word "former" before 33 U.S.C. § 1342.

that would violate any water quality standard, including toxicant standards, sediment criteria, and dilution zone criteria."

2. NPDES Permit Compliance with Water Quality Standards

Under federal law, NPDES permits must impose limits on discharges as necessary to meet water quality standards set by both state and federal statutes and regulations. 33 U.S.C. § 1311(b)(1)(C); *Snohomish County*, 386 P.3d at 1067. Specifically, State agencies may not issue NPDES permits if "the conditions of the permit do not provide for compliance with the applicable requirements of CWA, or regulations promulgated under CWA" or if "the imposition of conditions cannot ensure compliance with the applicable water quality requirements of all affected States." 40 C.F.R. § 122.4(a), (d).

Similarly, WAC 173-220-130(1)(b)(i) provides that any NPDES permit shall apply and ensure compliance with limitations necessary to "[m]eet water quality standards . . . pursuant to any state law or regulation." And WAC 173-201A-510(1) states that NPDES permits "must be conditioned so the discharges authorized will meet the water quality standards" and that no permit can be issued that "causes or contributes to a violation of water quality criteria."

These provisions demonstrate that the purpose of the NPDES permitting system is to ensure compliance with state water quality standards. *Port of Seattle v. Pollution Control Hr'gs Bd.*, 151 Wn.2d 568, 603, 90 P.3d 659 (2004). The Washington legislature has "in no uncertain terms" prohibited Ecology from issuing NPDES permits that allow discharges of toxic substances in violation of applicable standards. *Puget Soundkeeper All.*, 189 Wn. App at 138. As a result, "NPDES permits may be issued only where the discharge in question will comply with state water quality standards." *Port of Seattle,* 151 Wn.2d at 603.

Finally, WAC 173-220-150(1)(c) provides that each NPDES permit shall require that "*[a]ny discharge of any pollutant* . . . at a level in excess of that identified and authorized by the permit" constitutes a violation of permit terms and conditions. (Emphasis added.) Under this regulation, NPDES permits must require that *each discharge* comply with applicable water quality regulations. *See Puget Soundkeeper All.*, 189 Wn. App at 138.

3. Washington Water Quality Standards

Washington has developed its own water quality standards. *Port of Seattle*, 151 Wn.2d at 590. These standards include narrative water quality statements and numeric criteria for toxic substances. *Id.*

WAC 173-201A-240(1) provides the narrative water quality standard governing discharges of toxic substances.[8]

> Toxic substances shall not be introduced above natural background levels in waters of the state which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the department.

See also Puget Soundkeeper All., 189 Wn. App at 138-39.

WAC 173-201A-240(5) and the attached Table 240 provide specific numeric water quality standards for numerous toxic substances. The human health criteria for PCBs is 0.00017 µg/L. WAC 173-201A-240(5), tbl.240. The toxic substances criteria for marine water aquatic life for

[8] WAC 173-201A-240 has been amended since the events of this case transpired. However, these amendments do not impact the statutory language relied on by this court. Accordingly, we do not include the word "former" before WAC 173-201A-240.

copper is 4.8 µg/L (acute) and 3.1 µg/L (chronic) and for zinc is 90 µg/L (acute) and 81 µg/L (chronic).[9] WAC 173-201A-240(5), tbl.240.

C. USE OF METHOD 608 FOR TESTING PCB LEVELS

SIM's NPDES permit requires the use of Method 608, an EPA-approved PCB testing method, to measure PCBs in discharges from outfall 002. But the minimum detection limit of Method 608 is only 0.25 µg/L and Method 608 has a practical quantitation limit (PQL) of 0.5 µg/L.[10] This PQL is significantly higher than the PCB human health criteria of 0.00017 µg/L.[11]

Soundkeeper argues that Ecology violated Washington law by issuing an NPDES permit that required the use of Method 608, because that method is not sensitive enough to determine whether SIM's discharges violated the applicable water quality standard for PCBs. Soundkeeper claims that Ecology could not lawfully have issued the permit unless it specified the use of Method 1668C, a more sensitive test that can quantify PCB concentrations in the range of the water quality standard. Ecology argues that it was required to specify Method 608 in the permit under WAC 173-201A-260(3)(h) because it is the only testing method approved by the EPA. We agree with Ecology.

[9] "Acute" refers to short-term exposure, and "chronic" refers to long-term exposure. WAC 173-201A-020. The permit's "daily" limits relate to acute limits.

[10] The PQL represents the lowest level at which a pollutant concentration *reliably* can be quantified.

[11] Ecology imposed an effluent limitation for PCBs of 0.25 µg/L on outfall 002 discharges based on the minimum detection limit of Method 608. However, the Board ruled that this high detection limit did not justify imposing a higher effluent limit than the 0.00017 µg/L limitation for outfall 001. The Board remanded to Ecology for the revision of effluent limits for PCBs. Presumably, on remand Ecology will impose the 0.00017 µg/L limitation for outfall 002.

1. Legal Principles

Under federal law, monitoring must be done using "sufficiently sensitive" test methods. 40 C.F.R. § 122.44(i)(1)(iv). A method is sufficiently sensitive when either (1) the method minimum level is at or below the effluent limit established in the permit for the measured pollutant or (2) the method has the lowest minimum level of the analytical methods approved under 40 C.F.R. part 136 for the measured pollutant. 40 C.F.R. § 122.44(i)(1)(iv)(A)(1)-(2).

Washington law provides additional regulations regarding testing methods. WAC 173-201A-260(3) outlines how Ecology should set and measure water quality criteria. When setting numeric criteria for water quality, Ecology "will give consideration to the precision and accuracy of the sampling and analytical methods used, as well as the existing conditions at the time." WAC 173-201A-260(3)(g). Further, WAC 173-201A-260(3)(h) provides:

> The analytical testing methods for these numeric criteria must be in accordance with the '"*Guidelines Establishing Test Procedures for the Analysis of Pollutants*"' (*40 C.F.R. Part 136*) or superseding methods published. [Ecology] may also approve other methods following consultation with adjacent states and with approval of the [EPA].

This regulation allows the use of a testing method that is (1) listed in 40 C.F.R. Part 136, (2) a superseding method that has been published, or (3) approved for use by Ecology following consultation with the EPA.

Method 608 is listed in 40 C.F.R. Part 136 for monitoring PCBs, but Method 1668C is not. 40 C.F.R. 136, app. A. And Ecology has not approved Method 1668C for testing PCBs.

The EPA developed Method 1668C with the intention of listing it as an approved PCB testing method in 40 C.F.R. Part 136. The EPA also "published" Method 1668C for use in CWA programs. In April 2010, the EPA stated:

> The Office of Science and Technology (OST) in EPA's Office of Water developed Method 1668C . . . for use in Clean Water Act (CWA) programs. *EPA is publishing this Method* for users who wish to measure PCBs as congeners now, and in 2010, EPA expects to publish a proposal in the *Federal Register* for public comment to add this Method to other CWA Methods published at 40 CFR Part 136.

Administrative Record (AR) at 2751 (emphasis added).

Although the EPA proposed rulemaking to add Method 1668C to the list in 40 C.F.R. Part 136, it chose not to add the method. The EPA did not reject Method 1668C, but merely deferred approval. The EPA noted that it "is aware that this method is being used in some states in their regulatory programs and by other groups for some projects with good success." AR at 3587. But the EPA stated that it was "still evaluating the large number of public comments and intends to make a determination on the approval of this method at a later date. . . . This decision does not negate the merits of this method for the determination of PCB congeners in regulatory programs." AR at 3587.

2. Interpretation of WAC 173-201A-260(3)(h)

The Board concluded that Ecology's specification of Method 608 as the PCB testing method in SIM's NPDES permit was consistent with WAC 173-201A-260(3)(h) because Method 608 is the only method the EPA has approved. Soundkeeper argues that Ecology could have required Method 1668C for PCB testing because that method qualifies as a "superseding method[] published" under WAC 173-201A-260(3)(h).

To interpret agency regulations, we apply the same principles used to interpret statutes. *Puget Soundkeeper All.*, 189 Wn. App. at 136. Statutory interpretation is a matter of law that we review de novo. *Jametsky v. Olsen*, 179 Wn.2d 756, 761, 317 P.3d 1003 (2014). The purpose of statutory interpretation is to determine and give effect to the legislature's intent. *Gray v. Suttell*

& Assocs., 181 Wn.2d 329, 339, 334 P.3d 14 (2014). To determine legislative intent, we first look to the plain language of the statute, considering the text of the provision, the context of the statute, related provisions, and the statutory scheme as a whole. *Id.* If a statutory term is undefined, we may use a dictionary to determine its plain meaning. *Nissen v. Pierce County*, 183 Wn.2d 863, 881, 357 P.3d 45 (2015).

The parties apparently agree that Method 1668C is a "published" method. The question is whether Method 1668C is a "superseding" method. WAC 173-201A-260(3)(h) does not define the term "superseding." Supersede has numerous dictionary definitions, including "[1] to make obsolete, inferior, or outmoded, [2] to make superfluous or unnecessary, [3] to take the place of and outmode by superiority: supplant and make inferior by better or more efficiently serving a function." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 2295 (2002).

Soundkeeper argues that Method 1668C falls within the definition of a superseding method. Method 1668C has a PQL as low as 0.000022 µg/L.[12] Method 608's PQL is only 0.5 µg/L. Because Method 1668C's detection limit is much lower than Method 608's detection limit, Method 1668C can be considered a superior testing method that can take the place of Method 608.

But Ecology emphasizes that the EPA decided not to add Method 1668C to the list in 40 C.F.R. Part 136, and therefore Method 1668C cannot be said to have "superseded" the approved Method 608. Method 608 is not "superfluous or unnecessary" because it is still the only EPA-approved testing method. Ecology also argues that WAC 173-201A-260(3)(h)'s reference to a

[12] Method 1668C tests each of the 209 congeners that comprise the total PCBs individually, so the PQL may vary among the congeners.

superseding method refers only to new *versions* of methods already included in 40 C.F.R. Part 136, not entirely new methods.

The term "superseding method" is ambiguous. But Ecology and the Board have interpreted WAC 173-201A-260(3)(h) as not applying to Method 1668C. Because the regulation is ambiguous and its interpretation falls within Ecology's area of expertise, we will defer to Ecology's interpretation of its own regulation.[13] *See Snohomish County*, 386 P.3d at 1075.

We hold that under Ecology's interpretation of WAC 173-201A-260(3)(h), Method 1668C is not a published superseding method, and therefore Ecology could not consider that method for use in SIM's NPDES permit.

3. Use of Method 608

Soundkeeper also argues that even if Method 608 is the only approved method for testing PCBs, Washington law precludes Ecology from using Method 608 because it is not sensitive enough to enforce compliance with water quality standards. Soundkeeper's position is that Ecology's only lawful option is to refuse to issue the NPDES permit. We disagree.

The human health criteria for PCBs is 0.00017 µg/L. WAC 173-201A-240(5), tbl.240. Ecology adopted that standard as the effluent limitation for outfall 001, and the Board ruled that there was no justification for a higher effluent limitation at outfall 002. The problem is that Method 608 has a PQL of 0.5 µg/L. This means that Method 608 cannot detect when the PCB levels in SIM's discharges are higher than the 0.00017 µg/L limitation but less than 0.5 µg/L.

[13] Under WAC 173-201A-260(3)(h), Ecology also could use Method 1668C in NPDES permits if it approved that method after consulting with adjacent states and with the approval of the EPA. But the regulation states that Ecology "may" give such approval, WAC 173-201A-260(3)(h), and the Board noted that it had no authority to require Ecology to seek EPA approval of a different method.

Therefore, Soundkeeper argues that the use of Method 608 is improper because it potentially would allow SIM to discharge PCBs in concentrations that would violate the water quality standards in its NPDES permit.

But Soundkeeper's argument is inconsistent with federal and state law regarding testing methods. Federal law requires that monitoring be done using "sufficiently sensitive" test methods. 40 C.F.R. § 122.44(i)(1)(iv). Under 40 C.F.R. § 122.44(i)(1)(iv)(A)(2), a method is sufficiently sensitive when it has the lowest minimum level of the analytical methods approved under 40 C.F.R. part 136 for the measured pollutant. Method 608 is the only approved method for PCBs, and therefore it necessarily is the method with the lowest minimum level.

We hold that it is lawful for Ecology to issue an NPDES permit that calls for the use of Method 608 to test PCBs.

D. EFFLUENT LIMITATIONS FOR COPPER AND ZINC IN OUTFALL 002

In developing effluent limitations for copper and zinc discharges from outfall 002, Ecology imported numeric benchmark values from the 2009 General Permit. Use of the General Permit benchmarks resulted in daily effluent limitations of 14 µg/L for copper and 117 µg/L for zinc. These limitations are significantly higher than what Soundkeeper asserts site-specific WQBELs would be – daily limits of 4.8 µg/L for copper and 90 µg/L for zinc.

Soundkeeper argues that the Board erred in allowing Ecology to use copper and zinc limitations taken from the General Permit, which it characterizes as technology-based limitations, instead of calculating site-specific WQBELs. Ecology argues that the permit had to apply copper and zinc limitations taken from the General Permit because there was insufficient data for the permit writer to calculate site-specific WQBELs. Ecology also claims that the

General Permit limitations were water quality-based, not technology-based. We agree with Soundkeeper.[14]

1. Imposition of Effluent Limitations

When addressing the discharge of pollutants in an NPDES permit, Ecology must first determine whether an effluent limitation is required. An NPDES permit must contain effluent limits for a pollutant if there is a reasonable potential that a discharge will contain the pollutant in excess of water quality standards. 40 C.F.R. § 122.44(d)(1)(iii). A permit writer determines if an effluent limitation must be included in the permit by conducting a reasonable potential analysis: whether a facility's discharge will cause, has the reasonable potential to cause, or will contribute to a violation of water quality standards. 40 C.F.R. 122.44(d)(1)(ii), (iv).

Ecology's Permit Writer's Manual contains instructions for conducting a reasonable potential analysis. In order to perform a statistical reasonable potential analysis, a permit writer must develop an estimate of variability over time for each pollutant in a discharge. The most commonly used estimator is the coefficient of variation (CV), which is based on site discharge data. The CV is also used in the formula for calculating effluent limits for a permit.

Here, permit writer Abassi stated that in order to accurately calculate a CV, he needed at least 10 to 12 data points. But only two data points from SIM's outfall 002 discharge were available. Abassi testified that based on the lack of outfall 002 data, he could not calculate a CV and therefore could not perform a statistical reasonable potential analysis.

[14] The Board stated that Ecology considered the copper and zinc limitations to be interim limitations. Soundkeeper argues, and Ecology concedes, that the technology-based copper and zinc limits cannot be justified as interim limits because they are not part of a compliance schedule.

However, the Board concluded that Ecology actually *did* perform a reasonable potential analysis and determined that SIM's outfall 002 discharges had the reasonable potential to exceed water quality standards. The Board stated that although Abassi did not perform a statistical calculation of reasonable potential, he nevertheless decided that effluent limitations were necessary. And the Board noted that Abassi's supervisor testified that Abassi's evaluation of the outfall 0002 discharge was the equivalent of a reasonable potential analysis.

Ecology does not dispute the Board's conclusion that Abassi essentially conducted a reasonable potential analysis and that effluent limitations were required for zinc and copper for outfall 002 in SIM's NPDES permit. The question here is how to calculate those limitations.

2. Calculation of Effluent Limitations

Once Ecology determines that an effluent limitation is required, it next must determine the level of that limitation. Ecology claims that Abassi had insufficient data to develop WQBELs for copper and zinc at outfall 002. Abassi testified that because he could not calculate a CV, he could not calculate site-specific effluent limits. The Board deferred to "Ecology's technical determination that it lacked sufficient monitoring data for SIM's untreated stormwater discharge to develop site-specific numeric effluent limits." Clerk's Papers (CP) at 50. And the Board concluded that Abassi's decision to rely on the General Permit under these circumstances was reasonable.

Under the APA, we may grant relief from an agency order if it is not supported by substantial evidence. RCW 34.05.570(3)(e). Substantial evidence does not support the Board's conclusion for three reasons. First, Ecology did not make a "technical determination" that it had insufficient data to develop site-specific limitations. Abassi did testify about the absence of

sufficient data, but primarily in the context of his inability to calculate a CV for a specific effluent limit and to conduct a statistical reasonable potential analysis.

Ecology points to Abassi's statement that he would not use two data points "for enforcement or for limit." Report of Proceedings at 537. But this is Abassi's only reference to insufficient data in the context of developing effluent limitations. Further, Abassi did not expressly state that he was forced to use the General Permit benchmarks because he had insufficient data. He simply stated that the effluent limits in the permit came from the General Permit and that they seemed accurate and protective. This testimony did not establish a "technical determination that it lacked sufficient monitoring data" to develop site-specific limitations. CP at 50.

Second, the evidence shows that Abassi could have calculated site-specific WQBELs for outfall 002 despite the lack of data. Soundkeeper's expert, Allan Chartrand, testified that effluent data was not necessary to calculate water quality-based limits for an NPDES permit. Ecology's Permit Writer's Manual states that when there are fewer than 20 data points available to calculate a CV, a default CV of 0.6 may be used instead of a calculated CV. Therefore, Abassi could have calculated site-specific WQBELs using the default CV. Ecology does not address why this default CV was not used.

Third, Abassi testified that assuming a finding of reasonable potential, he could have determined the WQBELs for outfall 002. He stated that he would have used the human health calculations in Ecology's fact sheet: water quality standards for copper of 4.8 µg/L (acute) and 3.1 µg/L (chronic) and water quality standards for zinc of 90 µg/L (acute) and 81 µg/L (chronic). Because the Board found that Ecology had determined that SIM's discharges had the reasonable

potential to exceed water quality standards, this testimony means that Abassi did have sufficient information to determine site-specific WQBELs for outfall 002.

We hold that the Board's conclusion that Ecology lacked sufficient data to develop site-specific effluent limits for outfall 002 is not supported by sufficient evidence. Because this conclusion depends on an evaluation of the applicable facts rather than an interpretation of statutes or regulations, we do not give special deference to Ecology or the Board on this issue. *See Port of Seattle*, 151 Wn.2d at 594 (stating the standard of review for factual findings inherently includes an element of deference to the Board). As a result, we hold that the Board erred in concluding that Abassi acted reasonably when he relied on the General Permit.

3. Inadequacy of NPDES Permit Limitations

The Board concluded that the effluent limits in the NPDES permit for copper and zinc, which were based on the General Permit benchmarks, were consistent with applicable law. Soundkeeper argues that Washington law requires Ecology to use the lower site-specific WQBELs instead of the higher General Permit limitations. We agree with Soundkeeper.

Initially, Ecology argues that the limitations based on the General Permit were consistent with applicable law because they were in fact water quality-based limitations. Ecology claims that these limitations are water quality-based because the General Permit benchmarks involved pollutant discharge levels that would not exceed water quality standards for the likely pollutants found in industrial stormwater and were designed to protect water quality in the majority of receiving water conditions.

However, the Board referred to the limitations based on the General Permit benchmark as technology-based limits. Ecology does not challenge the Board's reference to the permit

limitations as technology-based. In addition, Ecology's own fact sheet for SIM's NPDES permit refers to the limitations as technology-based.

More significantly, even if the General Permit limitations were based on water quality standards generally applicable to all industrial dischargers, Ecology does not explain why those limitations complied with Washington law. The evidence shows that the limitations Ecology imposed do not comply with the specific water quality standards applicable here.

Both Abassi and Chartrand' testified that properly calculated WQBELs for the 002 outfall would have been the same as the water quality criteria in WAC 173-201A-240(5), Table 240: 4.8 µg/L (acute) and 3.1 µg/L (chronic) for copper and is 90 µg/L (acute) and 81 µg/L (chronic) for zinc.[15] But the permit limitations were significantly higher: daily limitations of 14 µg/L for copper and 117 µg/L for zinc. Therefore, SIM's NPDES permit would allow the discharge of pollutants in concentrations that would far exceed established water quality standards.

As stated above, Washington law is clear that Ecology cannot issue NPDES permits that would allow discharges of toxic substances that would violate applicable water quality standards. RCW 90.48.520; *Port of Seattle*, 151 Wn.2d at 603; *Puget Soundkeeper All.*, 189 Wn. App at 138. Therefore, we hold that the Board erred in concluding that the effluent limitations in SIM's NPDES permit – which were significantly higher than the water quality standards – were consistent with applicable law.

[15] Normally the water quality criteria are adjusted to account for a mixing zone and dilution to develop WQBELs. But for the untreated wastewater at outfall 002, there was no mixing zone and no dilution factor. This means that the water quality criteria would have been the effluent limit.

No. 48267-3-II

CONCLUSION

We affirm in part and reverse in part the Board's rulings on the proper PCB testing method and on the effluent limitations for copper and zinc. We remand to Ecology for revision of the effluent limitations for copper and zinc consistent with this opinion.

A majority of the panel having determined that this opinion will not be printed in the Washington Appellate Reports, but will be filed for public record in accordance with RCW 2.06.040, it is so ordered.

MAXA, A.C.J.

We concur:

WORSWICK, J.

SUTTON, J.

POLLUTION CONTROL HEARINGS BOARD
STATE OF WASHINGTON

PUGET SOUNDKEEPER ALLIANCE, Appellant, v. STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY; and SEATTLE IRON & METALS CORP., Respondent.	PCHB No. 13-137c FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER

INTRODUCTION

Puget Soundkeeper Alliance (PSA) appealed the National Pollutant Discharge Elimination System Waste Discharge (NPDES) Permit No. WA0031968 (Permit), issued by the Department of Ecology (Ecology) to Seattle Iron & Metals Corporation (SIM) for the discharge of wastewater and stormwater to the Lower Duwamish Waterway (LDW).

PSA asserts that the effluent limitations and conditions included in SIM's Permit violate applicable law and are insufficient to protect both surface water and sediment quality in the LDW. Prior to the hearing, PSA filed a motion for partial summary judgment which sought to invalidate the Permit on multiple grounds. The Pollution Control Hearings Board (Board) determined that genuine issues of material fact precluded a ruling on summary judgment.

The Board held a hearing in this matter on March 16-19, 2015, at its offices in Tumwater, Washington. The members of the Board hearing the matter were Chair Joan M. Marchioro, Kay M. Brown, and Thomas C. Morrill, with Administrative Appeals Judge Kristie C. Elliott

presiding at the hearing. Attorneys Richard A. Smith and Claire E. Tonry represented PSA. Assistant Attorney General Gordon Karg represented Ecology. Attorneys Stephen Parkinson and Matthew J. Stock represented SIM. Pennington Court Reporting provided court reporting services.

The Board received the sworn testimony of witnesses, admitted exhibits, and heard arguments on behalf of the parties. Written closing arguments were filed on April 6, 2015. Having fully considered the record, the Board enters the following:

FINDINGS OF FACT

1.

SIM operates an auto shredding and metal recycling operation on multiple adjacent properties on the east bank of the LDW near River Mile (RM) 2.5. Ex. E-11. SIM has operated on the LDW since moving to this general location in 1999. Operations on-site include the mechanical reduction and extraction of recoverable metal from auto shredder residue. Recovered metals are stockpiled, handled, sorted, and sold for use by other processors, while the non-metallic portion of auto shredder residue is disposed of at a landfill. As part of these operations, SIM discharges wastewater and stormwater to the City of Seattle's storm drain system, which then discharges to the LDW. Ex. E-2 at 5-8.

2.

PSA is a nonprofit citizen's organization founded in 1984 with the mission to preserve and protect the waters of Puget Sound. PSA has an interest in ensuring that discharge permits will be protective of the water and sediment quality, and that permit terms and conditions are

clearly and effectively tailored for purposes of enforcement. PSA patrols the Duwamish Waterway by boat in order to monitor discharges to the river. Wilke Testimony; Frederickson Testimony. During its patrols near SIM's facility, PSA members have observed SIM's discharge foaming or creating a colored film on the water and scrap metal from SIM's grabber falling into the LDW. Fredrickson Testimony; Exs. P-61, P-62, P-63.

3.

In conjunction with upland sources of contamination, the LDW constitutes a designated cleanup site under state and federal law, known as the LDW Site. The LDW Site is the approximately 5.5 mile stretch of the Duwamish River that flows into Elliot Bay. Ex. E-2 at 8. The LDW has served as Seattle's major industrial corridor since the early 1900s. Its heavy industrial use over the past century resulted in extensive contamination of the waterway. Exs. E-2 at 8-9, E-8 at 1-2. On September 13, 2001, the U.S. Environmental Protection Agency (EPA) placed the LDW Site on the National Priorities List, the list of the nation's most contaminated sites. Certain portions of the Duwamish Waterway are also listed on the state's 303(d) list, which Ecology prepares under the federal Clean Water Act (CWA), 33 U.S.C. § 1313(d), to identify water bodies that do not meet water quality standards. Chartrand Testimony; Exs. P-90, P-91. Source investigations and remedial actions for the LDW Site are ongoing. Exs. E-8 at 1, P-95 at 4.

4.

Hazardous substances can be found at elevated levels in LDW sediments and in fish and shellfish tissue in the LDW. Exs. E-8 at 22-31, P-89 (Tables 26, 28, 30), P-94 (Table A-1). The

four types of contaminants that pose the greatest risk to human health in the LDW are arsenic, polycyclic aromatic hydrocarbons (PAHs), dioxins/furans, and polychlorinated biphenyls (PCBs). Ex. E-8 at 39.

5.

PCBs are man-made chemicals that were widely used in electric transformers, hydraulic fluids, paint additives, plasticizers, adhesives, and fire retardants prior to being banned in the late 1970s. They are highly toxic and persist in the environment. They also bioaccumulate and biomagnify, which means they increase in concentration both in individual organisms and with each successive level of the food chain. PCBs do not readily dissolve in water but rather accumulate in fatty tissue in living organisms and in sediments or particulates in the organic substrate. Exposure to PCBs is linked to liver toxicity in adults, and thyroid dysfunction and adverse developmental effects in children exposed in the womb. Chartrand Testimony; Ex. P-95 at 9, 15.

6.

Due to elevated levels of PCBs found in LDW seafood tissue, the Washington Department of Health (DOH) concluded that "[e]ating even minimal amounts of resident seafood from the LDW would result in exposure to PCBs at levels of public health concern. For this reason, consumption of LDW resident seafood (fish and shellfish that live in the LDW) is a *public health hazard*." Ex. P-95 at 9 (emphasis original). A DOH-issued Fish Advisory is now in place warning the public not to eat resident fish, shellfish, or crab from the Duwamish River. Exs. P-97, P-98.

7.

A coordinated federal-state strategy for cleaning up the LDW Site is underway. The overall approach includes: (1) early identification and cleanup of the most contaminated areas of the waterway, (2) controlling sources of contamination to the waterway, and (3) implementation of a final cleanup remedy for the In-waterway Portion of the Site. Ex. E-8 at 1.

8.

EPA is the lead agency for investigation and cleanup of the In-waterway Portion of the Site under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601. In November of 2014, EPA issued a Record of Decision that selected the final remedy for the In-water Portion of the LDW Site. The Selected Remedy includes dredging and capping of the most contaminated areas that remain in the waterway, application of enhanced natural recovery for areas with more moderate contamination, and reliance on monitored natural recovery to further reduce concentrations over time in areas with lesser contamination. Ex. E-8 at 119-20. "The intent of the Selected Remedy is to reduce contaminant concentrations in sediments, surface water, and fish and shellfish tissue to the extent practicable, and to minimize reliance on fish and shellfish consumption advisories to reduce human exposure from ingestion of contaminated resident fish and shellfish." Ex. 8 at 13. The goal is also that "[o]ver time, the integrated approach of CERCLA and longer-term clean water actions is expected to result in attainment of applicable surface water quality criteria and uses designated under the CWA." Ex. E-8 at 14. The designated uses under the CWA for the LDW include fish and shellfish harvesting. E-8 at 34.

9.

Ecology is the lead agency for source control for the LDW Site. Ex. P-88 at 3. "The source control strategy focuses on controlling contamination that affects LDW sediments." *Id.* at 4. Ecology released a broad plan entitled "LDW Source Control Strategy" in 2004, followed by a more specific "East Source Control Action Plan for RM 2.3-2.8" in 2009. Mercury, PCBs, PAHs, dioxins/furans, and organo-tin compounds are considered to be the major contaminants of concern in sediments associated with RM 2.3–2.8. Exs. P-85, P-88.

10.

The area near SIM is not slated for active cleanup of PCBs in sediment and is not on the 303(d) list for PCBs. McCrea Testimony, Shervey Testimony. SIM's materials acceptance policy disallows the acceptance of any material knowingly containing PCBs. Geiselbrecht Testimony. However, sediment samples collected in the LDW indicate the presence of PCBs near the SIM facility at concentrations above the Sediment Quality Standards, WAC 173-204-300, -350. Exs. P-15 at 3, P-88 at 29; Chartrand Testimony.

11.

While there are numerous historic sources for the PCBs in the LDW and the presence of contaminants in sediment near the SIM facility could be related to past operations by previous property owners and/or other businesses in the area, PCBs are found in the types of materials processed by SIM. As a result, SIM is recognized as a potential source of contaminants that may contribute to recontamination of sediments at or near its facility. McCrea Testimony, Horner Testimony, Geiselbrecht Testimony; Ex. P-88 at 23-31. Elevated levels of PCBs have been

found in stormwater drainage facilities and other surface locations onsite or in SIM's vicinity. Although additional sources contribute stormwater to these drainage facilities, EPA and the City of Seattle have indicated there is a need to implement effective source control measures at SIM's facility. Exs. P-15, P-21, P-26.

12.

Prior to 2007, SIM's discharge to the LDW was authorized under the Industrial Stormwater General Permit (ISGP) in effect at the time. Starting in 2007, Ecology issued individual NPDES permits to SIM. Abbasi Testimony. The NPDES permit issued to SIM in 2007 (2007 Permit) imposed water quality-based effluent limitations (WQBELs) for SIM's treated discharges to Outfall 001, with numeric effluent limits for copper, lead, zinc, total PCBs, and total petroleum hydrocarbons. Ex. P-4 at 5. The 2007 Permit did not authorize a mixing zone for the treated discharge and did not regulate SIM's discharge of untreated stormwater. Ex. P-4.

13.

SIM's failure to meet certain effluent limits in the 2007 Permit resulted in Ecology issuing a Notice of Violation and Administrative Order (Order) in July 2008. Ex. E-2 at 1. The Order covered SIM's violations of the 2007 Permit effluent limits occurring between December 2007 and June 2008 and for an unauthorized discharge. *Id.* at 12-14. Addressing some of the noncompliance issues, SIM made several improvements to its treatment system. Geiselbrecht Testimony. The improvements included increasing detention capacity, improving the filtration system and adding pretreatment. *Id.*

14.

The individual NPDES Permit issued to SIM in 2013 (2013 Permit) is at issue in this appeal. The 2013 Permit was subsequently modified and reissued in 2014.[1] Ex. E-2 at 11-12. The 2013 Permit's effective period runs from October 1, 2013 to October 1, 2018. Ex. E-1. *Id.* at 25.

15.

The 2013 Permit covers two separate effluent streams that originate from SIM's facility and which are physically combined prior to discharge. The first effluent stream, Outfall 001, includes stormwater and some processed wastewater from SIM's industrial areas and the roof of its maintenance building. This effluent is treated prior to discharge (treated wastewater). The second effluent stream, Outfall 002, includes stormwater from most facility roofs and a parking lot. The effluent from Outfall 002 is not treated prior to discharge (untreated stormwater). Ex. E-2 at 5-8.

16.

An NPDES permit writer must determine whether effluent limits are necessary for a facility's discharges. Ecology's Water Quality Permit Writer's Manual (Manual) and EPA's Technical Support Document provide guidance for determining whether an effluent limit is necessary and, if so, how to calculate such a limit. Exs. E-4 at VII-8-VII-17; P-108 at 50-51.

[1] The Board consolidated for review the two appeals brought by PSA on the Permit's issuance and reissuance in 2013 and 2014, respectively, and this decision will refer to the Permit as the "2013 Permit." Ecology also modified the Permit on March 12, 2015, which is the subject of a separate appeal by PSA. *Puget Soundkeeper Alliance v. Ecology*, PCHB No. 15-050. The Board's decision in this case only considers the 2013 Permit as modified in 2014, and does not address the 2015 Permit modification.

Regarding the first question, is an effluent limit required, the permit writer is to determine whether the discharge has a reasonable potential to cause or contribute to a violation of water quality standards. *Id.* If the analysis shows that there is a reasonable potential, then the permit writer evaluates whether there is sufficient information to develop a numeric effluent limit for the pollutant(s) of concern. *Id.* When sufficient information exists, Ecology uses that information to calculate WQBELs. Abbasi Testimony.

17.

In drafting the 2013 Permit, Ecology's permit writer, Hamid "Ed" Abbasi, performed a reasonable potential analysis on SIM's treated wastewater discharge and determined that there was a reasonable potential for that discharge to adversely impact surface water quality. Mr. Abbasi calculated WQBELs for copper, lead, mercury, silver, zinc, and PCBs using historical data from the site. Abbasi Testimony. The 2013 Permit contains numeric effluent limits for those parameters applicable to SIM's treated wastewater. Ex. E-1 at 6.

18.

The numeric effluent limits for total PCBs in SIM's treated wastewater, which are based on human health criteria, are 5.1 ng/L average monthly and 8.9 ng/L maximum daily. The 2013 Permit also imposes a maximum daily Total Suspended Solids (TSS) limit of 10 mg/L as an additional effort to protect sediment quality. Exs. E-1 at 6, E-2 at 15. According to Ecology, since PCBs attach to solids, limiting the particulate discharge from SIM's treatment system will limit the amount of PCBs discharged. Ecology testified that SIM's treatment system is effective in extracting large particles, and thus using a TSS limit of 10 mg/L will result in a discharge of a

small quantity of small particles and fewer PCBs. Abbasi Testimony, Shervey Testimony, Ex. E-2 at 15.

19.

The 2013 Permit also allows a mixing zone for SIM's treated wastewater. *Id.* at 8. A mixing zone authorizes a limited area in the receiving water where certain numeric water quality criteria can be exceeded. Use of a mixing zone in the 2013 Permit resulted in applying dilution factors that raised the calculated limits for copper, lead, mercury, silver, zinc, and PCBs by a factor of 5.3 in the acute zone and 30.2 in the chronic zone. Abbasi Testimony, Ex. E-1 at 8. For example, the applicable ambient human health water quality criteria for PCBs is 0.00017 µg/L. Applying a mixing zone with a 30.2 dilution factor increases the effluent limit from the 0.00017 µg/L water quality standard to the 5.1 ng/L (.00051 µg/L) figure set forth in the Permit. Ex. E-1 at 6; Chartrand Testimony. The size of the 2013 Permit's acute and chronic mixing zones are the maximum allowed under Ecology's regulation, WAC 173-201A-400(7), (8). Ex. E-1 at 8.

20.

The 2013 Permit adds discharge limits for SIM's untreated stormwater effluent under Condition S1.B. Ex. E-1 at 7. The new requirements were added, in part, to address concerns raised by the City of Seattle and EPA regarding potential contamination from fugitive dust on SIM's roof and employee parking lot. Ex. P-26. When selecting effluent limits for SIM's untreated stormwater discharge, Mr. Abbasi evaluated the available data. Because the 2013 Permit constituted the first time that Ecology imposed effluent limits on that discharge, SIM's

permit application contained just two data points representing samples taken from roof runoff. Sampling conducted by EPA and the City of Seattle provided Ecology with one additional sample result. Mr. Abbasi concluded that there was insufficient data to conduct a reasonable potential analysis, which is a statistical-based calculation. Based on the available data, Mr. Abbasi concluded that the untreated stormwater was not clean and effluent limits should be imposed on that discharge. Abbasi Testimony.

21.

The numeric effluent limits for the untreated stormwater, with the exception of the limit for PCBs, were taken from the ISGP. Mr. Abbasi considered the use of ISGP benchmarks to be a conservative approach that would be protective of the LDW because the ISGP applies to other facilities in the area, and the benchmarks in the ISGP had been used for those facilities for approximately ten years. Abbasi Testimony, Exs. E-1 at 7 and E-2 at 40. In addition, he determined that the same benchmarks had been used in the multi-sector general permit issued by EPA throughout the country. Abbasi Testimony. For total PCBs in the untreated stormwater discharge, the 2013 Permit imposes a limit of .25 µg/L. Ex. E-1 at 7. This limit is a method detection limit rather than a WQBEL. The detection limit is based on the use of Method 608 for testing for the presence of PCBs. Ex. E-1, at 7.

22.

The 2013 Permit also requires SIM to develop an engineering report that addresses fugitive dust control, runoff from roofs and parking lots, and the potential for dust to be tracked out of the facility on vehicle tires. Ex. E-1 at 19-20. Initially, SIM's engineering report was due

four months after the effective date of the Permit (January 1, 2014), with construction of a treatment system to be completed by June 1, 2014, and an operations and maintenance plan prepared by January 1, 2015. Ex. E-2 at 30-31. SIM requested that Ecology extend the compliance schedule for one year because the company had been unable to obtain sufficient data on the stormwater runoff from the building roofs to develop the engineering report and construct a treatment system. Ecology concluded that SIM's request was appropriate and modified the Permit establishing a new compliance schedule and allowing SIM to submit its engineering report in two phases. Under Condition S9, SIM is required to submit its engineering reports and complete construction of the treatment system by June 1, 2015. The operations and maintenance manual is required to be completed by January 1, 2016. Abbasi Testimony, Shervey Testimony; Exs. E-1 at 20, E-2A at 1.

23.

SIM is also required to put in place best management practices (BMPs) to meet the technology-based limits for Outfall 002. Ecology considers the effluent limits in the 2013 Permit for the untreated stormwater to be interim limits as those limits will be modified based on the engineering report, the effectiveness of the BMPs and the data collected by SIM under the terms of the 2013 Permit. Shervey Testimony.

24.

PSA raises several objections to the effluent limits in the 2013 Permit applicable to both the treated wastewater and the untreated stormwater discharges. With regard to treated wastewater discharges from Outfall 001, PSA objects to Ecology granting SIM a mixing zone.

PSA asserts that the mixing zone does not meet the requirements of WAC 173-201A-400, particularly with regard to PCBs. LaLiberte Testimony; Chartrand Testimony. PSA claims that the discharge of PCBs from SIM's facility will result in the contamination or recontamination of sediments in the LDW. Chartrand Testimony.

25.

In order to allow the use of a mixing zone, Ecology must determine what, if any, dilution factor can be applied to an effluent concentration in light of the specific ambient pollutant concentration of the receiving water and the requirement that water quality criteria have to be met at the edge of any allowable regulatory mixing zone. Ahmed Testimony. Ecology's regulations provide that the use of mixing zones is limited:

> No mixing zone shall be granted unless the supporting information clearly indicates the mixing zone does not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the waterbody, result in damage to the ecosystem, or adversely affect public health as determined by the department.

WAC 173-201A-400(4).

26.

The permit writer must also consider the effect of a discharge to surface water on the quality of aquatic sediments. Ex. E-4 at IX-1. Ecology's Manual provides guidance on the derivation of effluent limits to protect aquatic sediments from contamination. The initial screening-level evaluation of a discharge's potential to impact sediments consists of a narrative evaluation and technical evaluation and is primarily based on readily available qualitative and quantitative information. "In general, facilities handling or producing known contaminants that

are commonly associated with pollution problems are considered to have a potential for causing sediment contamination and will generally undergo a detailed evaluation by the [Sediment Management Unit]." Ex. E-4 at IX-18.

27.

The Manual sets out a narrative evaluation that "may be used to identify facilities that have a low potential for sediment impacts, based on the general characteristics of the facility and the nature of the discharge." *Id.* at IX-20. The narrative evaluation is a two-step process. Under Step 1, "a discharge is generally considered not to have a risk for causing adverse sediment impacts if the facility has all of the following three characteristics: [a] a freshwater discharge to marine water, and [b] has secondary wastewater treatment or equivalent, and [c] discharges to an area with an average tidal velocity of 1 cm/sec or greater." *Id.* at IX-24 (emphasis original). If any of the three factors is not applicable, the permit writer proceeds to Step 2, which consists of a more thorough evaluation of the nature of the facility and the particular constituents in its discharge. *Id.* If the facility meets any of the criteria in Step 2, the discharge is "generally considered to have a risk for causing adverse sediment impacts." *Id.* One criterion under Step 2 is whether the discharge "has the potential to include toxic substances that may accumulate in the sediment." *Id.*

28.

Ecology conducted a narrative evaluation of SIM's discharge, concluding the analysis into potential sediment impacts after answering all three questions in Step 1 in the affirmative. Abbasi Testimony, Shervey Testimony. On this basis, Ecology determined that a mixing zone

could be applied to SIM's discharge without creating a reasonable potential to cause adverse sediment impacts. In making this initial determination, Mr. Abbasi considered no additional data regarding SIM's discharge and its potential to impact sediments, nor any data related to LDW fish tissue, water column, or sediment quality conditions. Abbasi Testimony; Shervey Testimony; Ex. S-2.

29.

The Board finds that Mr. Abbasi's analysis of the potential for SIM's discharge to cause sediment impacts with respect to PCBs was insufficient. Despite available information on PCB contamination in the LDW, sediment sampling data from stormwater catch basins on and in the vicinity of SIM's facility showing elevated levels of PCBs, and the presence of PCBs in SIM's own discharge, Mr. Abbasi ended his analysis at the conclusion of Step 1. The Board finds that Ecology's Screening-Level Evaluation of the Potential for Sediment Impacts form (Ex. E-4 at IX-20) fails to require an appropriate analysis of toxic pollutants such as PCBs, which bioaccumulate, biomagnify, persist in the environment and are not soluble. By concluding the analysis after Step 1, Ecology made no inquiry as to whether SIM's discharge "has the potential to include toxic substances that may accumulate in the sediment' and, therefore, did not thoroughly evaluate whether SIM's discharge posed a risk of causing adverse sediment impacts. Ex. E-4 at IX-24.

30.

In support of its challenge to the 2013 Permit's mixing zone, PSA presented the testimony of Allan B. Chartrand, a Senior Environmental Scientist with expertise in toxicology

and contaminated sediments. Ex. P-67. Mr. Chartrand opined that, due to the nature of SIM's discharge and the state of contamination in the LDW, Ecology should have elevated the reasonable potential inquiry. Mr. Chartrand testified that Ecology should have considered all available information and performed a higher-level technical review to assess potential sediment impacts. Such analysis would take into consideration the available tissue/sediment/water quality monitoring data, DMR data for SIM's discharge, information on the state of contamination and remedial actions required in the LDW at or near SIM's facility, data on PCB levels in catch basins/storm drains in the vicinity of SIM, fish advisory data, and partitioning behavior of PCBs. Mr. Chartrand testified that considering the available information, in his opinion a mixing zone for SIM's discharge was not appropriate as the discharge has a high potential to cause or contribute to adverse sediment impacts. Chartrand Testimony.

31.

Mr. Chartrand also testified that the application of a mixing zone for dilution of contaminants is inappropriate for PCBs. Persistent, bioaccumulative contaminants (PBTs), such as PCBs, do not effectively dilute as they move away from a source. EPA recognizes that mixing zones may be inappropriate for PBTs like PCBs. Chartrand Testimony; Exs. P-111 at Section 5.1.2, P-112 (63 Fed. Reg. 36791), P-115 at 11, P-131. EPA's mixing zone guidance emphasizes that a state's determination to authorize a mixing zone must be accompanied by a determination that there is available assimilative capacity in the receiving water. Chartrand Testimony; Ex. P-112 (63 Fed. Reg. 36742, 36787, 36791). According to EPA:

> The impacts of bioaccumulative compounds may extend beyond the boundaries of a given mixing zone with resulting impairment of a water body's designated uses, particularly where stationary species (e.g. shellfish) are present, where uncertainties exist regarding the assimilative capacity of a water body or where bioaccumulation in the food chain is known to be a problem. Sediment contamination has also become a major concern in both flowing and non-flowing water bodies. Concerns about sediment contamination require additional attention since typical mixing zone evaluations focus only on water column toxicity. The effects of persistent and bioaccumulative pollutants may not be detected for some distance from the point of discharge, well outside the mixing zone, or possibly not in the water column at all.

Ex. P-112 (63 Fed. Reg. 36791). The "assimilative capacity" of a water body "is the difference between the background level of a pollutant and the highest level that would comply with the water quality criterion." *Id.* at 36793.

32.

In Mr. Chartrand's opinion, the available information indicates that the LDW's assimilative capacity for additional PCBs is exhausted and the effluent limit for PCBs should be no more that the chronic water column criteria protective of human health (0.00017 µg/L). The mixing zone authorized for SIM's discharge allows a 30-fold increase in the allowable concentration and loading of PCBs discharged to the LDW. Mr. Chartrand testified that this will likely increase environmental damage to a water body already beyond assimilative capacity for PCBs. Chartrand Testimony; Exs. P-111 at Section 5.1.2, P-112 (63 Fed. Reg. 36791); P-115 at 11, P-131.

33.

Jerry Shervey, supervisor of the Industrial Wastewater Permit Writing Unit in Ecology's Northwest Regional Office, testified that water column data on background levels for PCBs in

the Duwamish River were lacking at the time the 2013 Permit was written. As a result, Ecology was unable to determine whether the LDW had available assimilative capacity for additional PCBs. At the time the 2013 Permit was being drafted, the stretch of river in question was not listed on the state's 303(d) list for PCBs. Shervey Testimony.

34.

Water column monitoring data recently published by King County shows that PCB levels in the Green River above the Duwamish River exceed applicable human health criteria. Mr. Shervey acknowledged that this more recent data suggests the LDW lacks additional assimilative capacity for PCBs, and that it would probably not be appropriate to grant a mixing zone in the future. Shervey Testimony; *see also* Chartrand Testimony.

35.

In addition to challenging Ecology's authorization of a mixing zone, PSA also questioned the accuracy of the Mixing Zone Study prepared by SIM's consultant and adopted by Ecology to establish the mixing zone in the 2013 Permit. Exs. S-1, E-1. The Mixing Zone Study describes the computer program used to model SIM's effluent discharge, identifies the variables used as model inputs to characterize the discharge and ambient flow environment, and recommends numeric effluent limits for various parameters based on the dilution factors derived from the model. Ex. S-2.

36.

The computer model applied by SIM's consultant was Version 6 of the Cornell Mixing Zone Expert System (CORMIX) model. Geiselbrecht Testimony. The environmental factors

reviewed in the Mixing Zone Study include the existing level of certain contaminants in the LDW, the shape of the LDW at the discharge location, data on tides and currents near the discharge location, the size and shape of the discharge pipe, the height of the discharge pipe in relation to the surface of the river, the constituents in the effluent, the effluent flow rate, the effluent temperature, and the wind speed near the discharge location. Exs. S-2 at 3-2 to 3-6, S-6 at 24; Geiselbrecht Testimony. The Mixing Zone Study reviewed 16 discharge scenarios. Three of the scenarios were modeled "as surface flow scenarios where the outfall is submerged at the surface of the receiving water body." S-2 at 4-8. After analyzing the 2008 LDW tide data and considering the intermittent nature of SIM's discharge, SIM's consultant determined that the submerged outfall surface flow scenario is a rare occurrence and that the version of CORMIX used in the study was unable to evaluate a partially-submerged outfall geometry. In light of those conclusions, the three submerged outfall surface flow scenarios were excluded from further analysis. The three excluded scenarios would have led to more stringent dilution factors if they had been included in the analysis. Ahmed Testimony; Ex. S-2 (Table 4.1). The Mixing Zone Study recommended a minimum dilution factor of 5.3 at the acute boundary and of 30.2 at the edge of the regulatory mixing zone. Ex. S-2 at 6-1.

37.

PSA's mixing zone expert, David LaLiberte, testified that the model used to develop the mixing zone in the 2013 Permit was an incorrect version of CORMIX and that many of the inputs used in the model were inaccurate. Mr. LaLiberte criticized the exclusion of the three flow scenarios as a misuse of CORMIX. In his opinion, excluding the three flow scenarios

improperly increased the dilution factor. Mr. Laliberte identified numerous other mistakes that he believed were made in the Mixing Zone Study. He testified that the discharge type was incorrectly characterized in terms of whether it was jet-like or spray-like. Mr. LaLiberte also questioned the assumed distance between the discharge pipe and the surface water and the assumption that the discharge always went directly into the surface water rather than landing on rocks on the bank of the river. He also testified that the assumed discharge was too cold, the assumed wind action was too strong, and the assumed current velocity and tidal action was too great. In Mr. LaLiberte's opinion, all of these errors result in a mixing zone dilution factor that is too high, leading to effluent limitations in the 2013 Permit that are not restrictive enough to protect the LDW. LaLiberte Testimony, Ex. S-4.

38.

Dr. Alison Geiselbrecht, SIM's consultant who oversaw the CORMIX modeling in the Mixing Zone Study, testified that the excluded flow scenarios had minimal impact on the calculation of the dilution factor because those scenarios would not normally take place in any significant number of events at the facility. She testified that any inaccuracies in the figures used in the model concerning the distance between the discharge point and the surface water were due to limitations in the model, rather than mistakes in the characterization of the discharge. CORMIX will only accept certain parameters because it is modeling a rectangular box, whereas river beds have contours that are much more irregular. Geiselbrecht Testimony; Ex. S-6 at 44-45.

39.

Dr. Geiselbrecht also testified that the figures used in the Mixing Zone Study for temperature, wind speed, current velocity, and tidal action were either accurate or were sufficiently accurate as to not materially impact the validity of the calculated dilution factor. In response to Mr. LaLiberte's critiques, SIM's consultant ran new calculations for the mixing zone using a newer version of CORMIX, Version 8, and determined that there was no need for any changes to the mixing zone set forth in the Permit. Geiselbrecht Testimony; Ex. S-5. Dr. Geiselbrecht testified that CORMIX 8 was capable of modeling a partially submerged outfall. Geiselbrecht Testimony.

40.

Mr. Abbasi asked Anise Ahmed, an environmental engineer with Ecology's Environmental Assessment Program, to review the Mixing Zone Study. Dr. Ahmed is familiar with mixing zone models, including CORMIX, and acts as a consultant to Ecology's NPDES permit writers. Dr. Ahmed testified that he had responsibility for approving the Mixing Zone Study on behalf of Ecology. The Water Quality Program is responsible for determining the dilution factor to include in an NPDES permit. Ahmed Testimony.

41.

Discussing the excluded critical discharge scenarios, Dr. Ahmed testified that he would have considered all of those conditions in a mixing zone analysis. EPA reviewed the Mixing Zone Study and expressed its concerns to Dr. Ahmed that exclusion of the three critical discharge scenarios resulted in less stringent dilution factors. Ahmed Testimony. Dr. Ahmed

told SIM's consultant and Mr. Abbasi that if those scenarios were excluded from the analysis then, consistent with the recommendation in the Mixing Zone Study, SIM should evaluate whether it could limit its discharge at times when the outfall was partially submerged. Dr. Ahmed did not review any engineering analysis prepared by SIM on this issue. After his initial review of the Mixing Zone Study, Dr. Ahmed provided comments on the study and a revised report was prepared. Dr. Ahmed testified that SIM's consultants addressed all of his concerns in the final report. Ahmed Testimony.

42.

SIM's Stormwater Treatment Engineering Report, dated April 9, 2010, included an evaluation of the percentage of time the site discharges treated wastewater to the LDW while the outfall is submerged. Ex. S-8 (Appendix L). Using data from 2008, the study stated that such discharges occurred 0.561 percent of the time. *Id.* Based on its determination that the three critical flow scenarios are rare occurrences and could be ignored, SIM's Stormwater Treatment Engineering Report did not include the requested evaluation of whether it would be possible to minimize discharges at times when the outfall was submerged. *Id.*; Geiselbrecht Testimony.

43.

The 0.561 percent figure was calculated by comparing the number of hours the outfall was both submerged and discharging with the total number of hours in the applicable month. The calculation represents the percentage of time the outfall is expected to be discharging when it is submerged in any given month. *Id.*; Shervey Testimony. Mr. Shervey agreed that another way to calculate the percentage of time that SIM discharges when the outfall is submerged is to

divide the number of hours the outfall was submerged and discharging by the total number of hours the outfall actually was discharging during the month. Mr. Shervey testified that SIM's use of the total hours in each month rather than just the amount of time there was an actual discharge was appropriate because the discharge limits are based on a steady-state, rather than intermittent, discharge. Concluding that SIM's engineering report demonstrated that the three critical discharge scenarios were rare and applying Permit Writer's Manual's guidance concerning mixing zones, Ecology agreed that those scenarios could be excluded from SIM's mixing zone analysis. Shervey Testimony. A similar analysis was not performed to evaluate the rarity of the other discharge scenarios modeled. *Id.* As noted above, SIM's Stormwater Treatment Engineering Report did not evaluate the possibility of minimizing discharges at times when the outfall was submerged. Ex. E-8.

44.

PSA also challenged the 2013 Permit's effluent limits for untreated stormwater. Mr. Chartrand testified that, in his opinion, Ecology had not completed a reasonable potential analysis for that discharge. According to Mr. Chartrand, the levels allowed for PCBs, copper, zinc, and mercury in the untreated stormwater will cause impacts to water and sediment quality in light of the history of exceedances at or near the facility. Ex. P-16, 17, 21, 22, 24, Chartrand Testimony. Mr. Chartrand stated that the effluent limits for metals in the untreated stormwater are technology-based limits and are less protective than water quality-based limits. Finally, Mr. Chartrand testified that for PCBs the effluent limit should not be a method detection limit of 0.25

µg/L, rather the effluent limit should be the human health criteria limit of 170 picograms per liter (.00017 µg/L). Chartrand Testimony.

45.

Mr. Abbasi testified that in evaluating SIM's untreated stormwater discharge, he reviewed the available monitoring data. Because there were only three data points, he concluded that he could not perform a statistical-analysis of the discharge's reasonable potential. Mr. Abbasi also concluded that SIM's discharge was "not clean" and required the imposition of numeric effluent limits. Mr. Abbasi used the ISGP's benchmarks as interim numeric limits for Outfall 002. Abbasi Testimony; Ex. E-1 at 7. While Mr. Abbasi did not conduct a statistical calculation for a reasonable potential analysis, his supervisor testified that the analysis performed by Mr. Abbasi to determine the effluent limits for the untreated stormwater was equivalent to a reasonable potential analysis. Shervey Testimony.

46.

PSA challenges the analytical testing methods prescribed by the 2013 Permit for determining the presence of PCBs in SIM's discharges. The effluent limit for total PCBs in SIM's untreated stormwater is 0.25 µg/L. Ex. E-1 at 7. This limit represents the minimum value that the approved analytical test, Method 608, can detect. Abbasi Testimony. Although there are other analytical tests for PCBs, such as Methods 8082A and 1662, Ecology is required to use the current EPA-approved analytical testing method. WAC 173-201A-260(3)(h). Ecology selected Method 608 for SIM's untreated stormwater discharge because it is the only method approved by

EPA for use in NPDES permits for compliance purposes. Abbasi Testimony; Shervey Testimony.

47.

Effluent discharged at Outfall 001 is required to be analyzed under Method 8082A, while effluent discharged at Outfall 002 is analyzed under Method 608. Ex. E-1 at 6-7. PSA argues that those methods are insufficient to assess compliance with effluent limits and to ensure that there is no potential for PCBs in SIM's discharges to adversely impact sediment. Ann Bailey, a Senior Environmental Scientist with EcoChem, Inc., testified that the appropriate method to require is Method 1668, which detects PCBs at much lower concentrations than either Method 608 or 8082A. Bailey Testimony.

48.

The parties presented testimony regarding the three analytical testing methods used for detecting PCBs. The oldest, Method 608, is the only method approved by EPA for use in NPDES permits for compliance purposes. Method 8082A, while not approved for compliance in NPDES permits, is a method that EPA has used for years in solid waste testing. It is a more sensitive testing method than Method 608, and is the analytical testing method used by the City of Seattle and Ecology's toxics cleanup program for source tracing in the LDW. McCrea Testimony; Shervey Testimony. The most recently developed method is Method 1668. It is the most sensitive testing method for detecting the presence of PCBs in water and is approximately ten times more expensive than Methods 608 or 8082A. EPA has not approved Method 1668 for use in NPDES permits and, at the time the 2013 Permit was being written, only one lab in the

United States, located in Florida, was accredited to perform this method. Ecology did not consider the use of Model 1668 in the 2013 Permit. Ex. E-1, Shervey Testimony, Bailey Testimony.

49.

All testing methods have a method detection level (MDL), considered the lowest level at which the concentration of a substance can reliably be detected. Using the MDL, the Practical Quantitation Limit (PQL) is then statistically calculated. The PQL represents the lowest level at which a concentration can be detected where the accuracy (precision and bias) of the detection achieves the objectives of the intended purpose. If the effluent limit specified in the 2013 Permit is less than PQL, then the effluent limit effectively becomes the PQL of the testing method. Bailey Testimony, Ex. E-1 at 6, 7, 52, 53.

50.

For the treated wastewater discharged at Outfall 001, the 2013 Permit specifies the use of Method 8082A and explains that the PQL for Method 8082A is 0.1 µg/L and the MDL is 0.017 µg/L. Ecology elected to use PQL to determine compliance with the effluent limits for total PCBs. Ex. E-1 at 6. Accordingly, if the measured effluent concentration for PCBs is less than the PQL, SIM must report less than 0.1 µg/L on the discharge monitoring report form. *Id.* For the untreated stormwater discharged at Outfall 002, the 2013 Permit specifies the use of Method 608 and explains that the final maximum daily total PCB limit (0.25 µg/L) is based on the MDL for Method 608. Ex. E-1 at 6-7.

51.

Mr. Shervey testified that Method 608 is the only method for testing PCBs currently approved by EPA for use in NPDES permits for compliance monitoring and that WAC 173-201A-260(3)(h) requires Ecology to use the analytical testing method specified by EPA in the current code of federal regulations. Under that rule, Ecology can use other analytical testing methods with the approval of EPA. Shervey Testimony. Mr. Shervey explained that Ecology included Method 8082A in the 2013 Permit because the agency felt that it needed to detect PCBs in effluent at lower levels than Method 608 would allow. Method 8082A is used extensively in the LDW for source tracing by EPA, King County, the City of Seattle and Ecology's clean-up program, and is used in administrative orders issued by Ecology's Water Quality Program. In addition, the method is commonly available and affordable. SIM agreed to use Method 8082A to analyze its treated effluent from Outfall 001. Shervey Testimony.

52.

Ecology subsequently determined it was legally incorrect to require SIM to use Method 8082A as the agency had not obtained EPA approval. Prior to the hearing, Ecology modified the 2013 Permit, replacing the requirement to use Method 8082A for the treated effluent with Method 608.[2] Mr. Shervey testified that requesting blanket approval from EPA to use Method 8082A in the Duwamish River would be a good proposal because the method is already being used by several government agencies, including Ecology. Shervey Testimony.

[2] PSA appealed this modification to the Board. *See Puget Soundkeeper Alliance v. Ecology,* PCHB No. 15-050. This decision does not address the propriety of Ecology's recent modification of the 2013 Permit.

53.

The parties disagree on whether the 2013 Permit requires "all known, available, and reasonable methods of prevention, control, and treatment" (AKART). WAC 173-201A-020. To implement AKART for stormwater permits, Ecology considers what the known and utilized treatment systems are for the particular industry or similar industries within the state or sometimes across the entire country. Ecology keeps a reference list of known, proven technologies for stormwater treatment and requires that an applicant's engineer prepare a report for Ecology's review that examines different treatment alternatives and identifies technologies best suited to the facility. Ecology considers economic feasibility if the facility identifies a viable treatment alternative but may reject that treatment technology on the basis of cost. Shervey Testimony.

54.

PSA's expert Dr. Richard Horner asserted that the 2013 Permit does not require AKART for SIM's facility. Dr. Horner, an engineer with experience advising on BMPs for scrap metal facilities like SIM, believes that SIM's treatment system is being overloaded by the amount of pollutants directed to it and is not being operated effectively. He testified it is very unlikely, for example, that SIM cleans its catch basins frequently enough, and noted that SIM's Stormwater Pollution Prevention Plan states only that catch basins will be cleaned with no mention of frequency. Dr. Horner also suggested that SIM could utilize an enhanced sand treatment system, which operates on the principle of coagulating and flocculating solids so they are more easily filtered. Because Dr. Horner did not perform an analysis of SIM's treatment system he was not

able to offer an opinion on whether specific changes to the system were necessary. Horner Testimony, Ex. P-45.

55.

Dr. Horner's primary opinion is that SIM should be required to cover and contain its operations as part of implementing appropriate source control and BMPs to avoid or minimize stormwater contamination. He explained that enclosing operations would be more effective than treatment, but could also improve the efficacy of the treatment system such that changes to the system may not be necessary. Dr. Horner did not assess the feasibility or cost associated with enclosing operations at SIM's facility. He did testify that several auto shredders in other states have enclosed their operations. In Dr. Horner's opinion, this demonstrates that covering an auto shredding facility constitutes AKART and SIM should be required to meet that standard. Horner Testimony; Exs. P-72, P-74, P-80, P-120.

56.

Mr. Shervey did not agree with Dr. Horner's assessment that meeting AKART requires that SIM enclose its operations. He recognized that SIM could better operate its treatment system to achieve more consistent compliance with effluent limits, and that improvements to the system may be warranted. Mr. Shervey acknowledged that enclosing operations at the facility, thereby reducing or eliminating stormwater contact, could improve the efficacy of the system. However, only limited evaluation of the feasibility for enclosing operations has been performed to date. While containment may be a consideration in the future, Ecology is still evaluating the

treatment system's performance under the 2013 Permit, and has made no determinations yet on whether changes might be needed. Shervey Testimony.

57.

The Board finds that Ecology performed an AKART analysis for the 2013 Permit. Mr. Abbasi visited another large scrap metal facility in Washington. He also required SIM to submit an engineering report that addressed AKART. Abbasi Testimony. The report addressed available technologies and reviewed stormwater processes at other facilities. Ex. S-8. The report discussed roofing the entire facility as a technology for controlling stormwater. Roofing the facility was rejected as infeasible because the roof would need to be 6.47 acres in size and the placement of support pillars would disrupt or prohibit necessary facility operations. The size of the roof would also make it prohibitively expensive, with a "conceptual cost of $28 to $37 million." Ex S-8 at 4-24; Abbasi Testimony.

58.

Ecology concluded that, through treatment of its wastewater discharged from Outfall 001 by use of a Dissolved Air Flotation (DAF) treatment system, along with the addition of a pre-treatment system and other proposed enhancements, SIM is implementing AKART. SIM's treatment system uses DAF to remove oil that is present from processing automobiles. This is followed by a mixing tank, which mixes settling chemicals called flocculants, into the waste stream. The mixture is allowed time to settle and for the particles to come together. Finally, the liquid is run through a sand filter to remove the particles that have been accumulated together. Abbasi Testimony; Shervey Testimony; Ex. P-45.

59.

For Outfall 002, Ecology used an adaptive management approach to implement AKART. SIM is required to implement BMPs such as cleaning the roofs and drains on a regular basis. The 2013 Permit sets effluent limits for runoff from the roofs and drains. Ecology also required SIM to conduct a study of runoff from roofs and the employee parking lot and to submit engineering reports assessing measures to be implemented for dust control and application of BMPs. A treatment system for Outfall 002's discharge must be constructed by June 1, 2015. Abbasi Testimony, Shervey Testimony, Exs. E-1 at 19-20, E-2.

60.

Any Conclusion of Law deemed to be properly considered a Finding of Fact is hereby adopted as such.

Based upon the foregoing Findings of Fact, the Board enters the following:

CONCLUSIONS OF LAW

1.

The Board has jurisdiction over the subject matter and the parties pursuant to RCW 43.21B.110(1)(d). The burden of proof is on the appealing party as to the issues in the case. WAC 371-08-485(3). The Board considers the matter *de novo*, giving deference to Ecology's expertise in administering water quality laws and on technical judgments, especially where they involve complex scientific issues. *Port of Seattle v. Pollution Control Hearings Board*, 151 Wn.2d 568, 593-94, 90 P.3d 659 (2004). Similarly, Ecology's interpretations of water quality statutes and its own regulations are entitled to great weight, unless such interpretation conflicts

with the statute's plain language. *Id.* at 593-94. Pursuant to WAC 371-08-540(2), "[i]n those cases where the board determines that the department issued [an NPDES] permit that is invalid in any respect, the board shall order the department to reissue the permit as directed by the board and consistent with all applicable statutes and guidelines of the state and federal governments."

2.

The CWA was enacted with the broad policy objective of restoring and maintaining the chemical, physical, and biological diversity of the nation's waters. One action in furtherance of this goal was creation of the NPDES permit program. *Puget Soundkeeper Alliance v. Ecology,* 102 Wn. App. 783, 788, 9 P.3d 892 (2000). To serve those ends, the CWA prohibits the discharge of any pollutant by any person unless done in compliance with provisions of the Act and/or in compliance with an NPDES permit. 33 U.S.C. §§ 1311(a) and 1342. Pursuant to RCW 90.48.260, the legislature authorized Ecology to implement and enforce all programs necessary to comply with the CWA, 33 U.S.C. § 1251. Such powers include the authority to administer the NPDES permit program (ch. 173-220 WAC) and to establish water quality standards for surface water (ch. 173-201A WAC).

3.

The issues identified for resolution in the Pre-Hearing Order are:[3]

1. Is National Pollution Discharge Elimination System (NPDES) Permit No. WA0031968, issued September 16, 2013 and modified August 26, 2014, to Seattle Iron and Metals Corp. (SIM), ("the permit"), inconsistent with applicable law, including 33 U.S.C. § 1311(b)(1)(C), 40 C.F.R. § 122.44, RCW 90.48.520, WAC 173-201A-010, -260, and -510, and WAC 173-204, because the effluent

[3] PSA voluntarily withdrew Issues 5, 8, 9, 12b, and 12c.

limitations and other conditions pertaining to the discharge from outfall 001 are inadequate to ensure that discharges do not cause or contribute to violations of water quality and sediment quality standards?

2. Is the permit inconsistent with applicable law, including 33 U.S.C. § 1311(b)(1)(C), 40 C.F.R. § 122.44, RCW 90.48.520, WAC 173-201A-010, -260, and -510, and WAC 173-204, because the effluent limitations and other conditions pertaining to the discharge from outfall 002 are inadequate to ensure that discharges do not cause or contribute to violations of water quality and sediment quality standards?

3. Is the permit's authorization of discharge of PCBs inconsistent with applicable law, including WAC 173-201A-010, -260, and -510, and WAC 173-204, because it does not ensure that discharges will not cause or contribute to violations of applicable water quality and sediment standards?

4. Is the permit inconsistent with applicable law, including 40 C.F.R. § 122.44(d), requiring reasonable potential analysis?

6. Is the permit inconsistent with applicable law, including WAC 173-201A-400, in its authorization and sizing of mixing zones?

7. Is the permit inconsistent with applicable law, including 40 C.F.R. §§ 122.4 and 122.44 and 33 U.S.C. § 1308, because the laboratory analysis method specified for PCB discharge concentrations is inadequate to determine compliance with appropriate water quality-based effluent limitations?

10. Is the permit inconsistent with applicable law concerning AKART requirements, including RCW 90.52.040 and WAC 173-220-130, because it does not require the implementation of AKART?

11. Is the compliance schedule, including the provisions of condition S9, inconsistent with applicable law, including 40 C.F.R. § 122.62(a)(4), WAC 173-201A-510 and WAC 173-220-140, and WAC 173-220-190?

12. Are the following portions of the permit unreasonably vague and confusing:
    a. requirements concerning shoreline cleanup and barge loading, including conditions S8, S9, and S15?

A. Pursuant to existing regulations, Ecology is required to use Method 608 (Issue 7)

4.

The 2013 Permit requires the use of different analytical testing methods to detect the presence of PCBs in discharges from Outfall 001 and Outfall 002. For Outfall 001, Ecology requires the use of the Method 8082A, while Method 608 is required to be used for discharges from Outfall 002. As described above, Method 8082A is a more sensitive testing method than Method 608. EPA developed a third analytical test method, Method 1668, which is more sensitive than Methods 608 or 8082. The state Surface Water Quality Standards, ch. 173-201A WAC, identify the procedures Ecology is to use when applying the appropriate water quality criteria for a waterbody. With respect to analytical testing methods, the standards state:

> The analytical testing methods for these numeric criteria must be in accordance with the "*Guidelines Establishing Test Procedures for the Analysis of Pollutants*" (*40 C.F.R. Part 136*) or superseding methods published. The department may also approve other methods following consultation with adjacent states and with the approval of USEPA.

WAC 173-201A-260(3)(h). At this time, EPA has approved only Method 608 for use in NPDES Permits. Shervey Testimony, Bailey Testimony. Ecology may petition EPA for approval of an alternative test procedure. 40 C.F.R. §136.4; WAC 173-201A-260(3)(h).

5.

While acknowledging that EPA has designated Method 608 for compliance monitoring in NPDES permits, PSA asserts that Ecology should be required to seek EPA's approval to use Method 1668 in SIM's 2013 Permit. According to PSA, Ecology's failure to pursue that option constitutes a violation of the stated policies of the state Water Pollution Control Act (WPCA),

which direct the agency to use its powers to protect and preserve the quality of the state's waters. RCW 90.48.010. PSA requests that the Board remand the 2013 Permit and require Ecology to address this error.

6.

The Board reviews the terms of an NPDES permit to determine if it is "invalid in any respect," and whether it is consistent with applicable legal requirements. WAC 371-08-540(2); *Pierce County v.* Ecology, PCHB Nos. 12-093c and 12-097c (Order on Summary Judgment, Oct. 2, 2013); *Copper Development v. Ecology*, PCHB No. 09-135 through 09-141, (Order on Summary Judgment, Jan. 5, 2011). The policy declarations in the WPCA do not "control over the more specific statutory provisions adopted to implement those general declarations" and those declarations "have no operative force in and of themselves." *Puget Soundkeeper Alliance v. State of Washington, Department of Ecology*, 102 Wn. App. 783, 790, 9 P.3d 892 (2000).

7.

The Board concludes that the 2013 Permit is consistent with the provision of the state Surface Water Quality Standards requiring the use of the EPA-approved analytical test method published in the Code of Federal Regulations. WAC 173-201A-260(3)(h). The analytical test for PCBs currently approved by EPA for compliance monitoring in NPDES permits is Method 608. The evidence presented showed that Method 8082A is widely used in the Duwamish River and is more sensitive than Method 608. While Mr. Shervey testified that seeking EPA approval of Method 8082A for use in the Duwamish River would constitute a good proposal, the Board lacks the authority to require Ecology to petition EPA for approval to use Method 8082A.

B. Reasonable potential analysis performed for SIM's discharges and technology-based numeric effluent limits for Outfall 002 are appropriate (Issues 2, 3 and 4)

8.

As described above, when preparing an NPDES permit, the permit writer is to determine if the discharge has a reasonable potential to cause or contribute to a violation of water quality standards. 40 CFR §122.44(d)(1)(i); Exs. E-4 at VII-18-VII-15, P-108 at 50-51. If it is determined that the discharge contains a pollutant that has the reasonable potential to cause or contribute to a violation, then the permit must include an effluent limit for that pollutant. 40 CFR §122.44(d)(1)(iii). Where development of a numeric effluent limit is infeasible, the permit shall contain BMPs to control or abate the discharge of the pollutant. 40 CFR §122.44(k).

9.

In preparing the 2013 Permit, Mr. Abbasi performed a reasonable potential analysis on SIM's treated wastewater discharges from Outfall 001. Finding there was a reasonable potential the discharge would violate water quality standards, Mr. Abbasi calculated WQBELs for various pollutants and included numeric effluent limits for those parameters in the 2013 Permit. Abbasi Testimony; Ex. E-1 at 6. PSA presented no evidence controverting these facts.

10.

PSA asserted that Mr. Abbasi failed to conduct a reasonable potential analysis on SIM's untreated stormwater discharges from Outfall 002. Relying on EPA's guidance document, Mr. Chartrand opined that Ecology did not need effluent data to perform the analysis or to determine permit limits and, in his opinion, SIM's untreated stormwater discharge had the potential to

violate water quality standards. Chartrand Testimony; Ex. P-108 at 50-51. Mr. Abbasi testified that he evaluated the available sampling data for that discharge and concluded there were insufficient data points to perform a statistical calculation of reasonable potential. Mr. Abbasi also concluded that because SIM's untreated stormwater discharge was "not clean," he needed to impose numeric effluent limitations in the 2013 Permit. Abbasi Testimony; Ex. E-1 at 7. Mr. Abbasi's supervisor, Mr. Shervey, testified that while Mr. Abbasi did not conduct a statistical analysis of reasonable potential, his evaluation of the untreated stormwater discharge was the equivalent of a reasonable potential analysis. Ecology considers the effluent limits on Outfall 002 to be interim limits which will be modified based on the engineering report, the effectiveness of the BMPs, and the data collected by SIM under the terms of the 2013 Permit. Shervey Testimony.

11.

The Board concludes that Ecology performed a reasonable potential analysis on SIM's discharges from Outfall 001 and 002 as required by applicable law. *See* 40 C.F.R. § 122.44(d). Ecology found that SIM's discharges had the reasonable potential to exceed water quality standards and imposed numeric effluent limits on each discharge stream. Ex. E-1 at 6-7. The Board defers to Ecology's technical determination that it lacked sufficient monitoring data for SIM's untreated stormwater discharge to develop site-specific numeric effluent limits.

12.

Given the absence of sufficient monitoring data, Ecology could have imposed narrative effluent limits on the discharge from Outfall 002 in the form of BMPs but elected to impose

numeric limits instead. 40 C.F.R. 122.44(k)(3). Mr. Abbasi's decision to use the technology-based benchmark limits from the ISGP as numeric effluent limits for SIM's untreated stormwater was reasonable. The 2013 Permit represents the first time Ecology imposed numeric effluent limits on SIM's untreated stormwater. Ecology considers the limits interim in nature and the technology-based limits will be replaced with water quality-based limits derived from the monitoring data collected by SIM under the terms of the 2013 Permit. Shervey Testimony. With the exception of the effluent limit for PCBs, discussed below in Section E, the Board concludes that the numeric effluent limits imposed on SIM's untreated stormwater discharge from Outfall 002 are consistent with applicable law.

C. The 2013 Permit requires implementation of AKART and the extension of the compliance schedule for the engineering report was consistent with applicable law (Issues 10 and 11)

13.

The WPCA requires that all state and federal discharge permits incorporate permit conditions requiring AKART. RCW 90.48.520; 90.58.010; *see also* RCW 90.52.040 and RCW 90.54.020(3)(b). Ecology's rules define AKART as "the most current methodology that can be reasonably required for preventing, controlling, or abating the pollutants associated with a discharge." WAC 173-201A-020. The Washington Court of Appeals has further clarified that the "reasonableness" prong of AKART limits Ecology "to requiring a system that is both economically and technically feasible." *Puget Soundkeeper Alliance v. State of Washington,* 102 Wn. App. 783, 792-793, 9 P.3d 892, 897 (2000).

14.

Relying on the testimony of its expert, Dr. Horner, PSA claims that the 2013 Permit fails to implement AKART. According to Dr. Horner, enclosure of SIM's operations in a roofed building constitutes AKART for an auto shredding facility. Dr. Horner based his opinion regarding AKART on his determination that several auto shredding facilities in other states had enclosed all or part of their facilities. Dr. Horner did not evaluate whether enclosing SIM's operations would be technologically or economically feasible. Dr. Horner testified that he believed that SIM's treatment system was being overloaded by pollutants from the site and suggested the addition of sand filtration. However, he did not perform a specific evaluation of SIM's existing treatment system and could not opine whether that system required improvement. Horner Testimony.

15.

The Board concludes that PSA did not meet its burden on this issue. The evidence presented by PSA did not establish that that enclosure of all or part of SIM's operations constituted AKART. As stated above, AKART limits Ecology to requiring a system that is both technologically and economically feasible. PSA did not assess the technological or economic feasibility of enclosing SIM's operations. While PSA disagreed with the costs contained in SIM's engineering report, Ex. S-8, it did not provide contrary evidence. Nor did PSA present evidence demonstrating that Ecology erred in determining that SIM's use of a DAF treatment system constituted AKART.

16.

The Board also concludes that the 2013 Permit requires AKART for SIM's untreated stormwater discharged at Outfall 002. The 2013 Permit requires SIM to prepare a Stormwater Pollution Prevention Plan incorporating applicable BMPs from Ecology's stormwater manual and to implement those BMPs at its facility. Ex. E-1 at 22-27. Mr. Abbasi testified that the 2013 Permit's use of BMPs to address stormwater discharged to Outfall 002 constituted AKART. Abbasi Testimony. Under WAC 173-226-070(1)(d), AKART may be imposed through use of BMPs.

17.

Conditions S8 and S9 of the 2013 Permit require SIM to prepare an engineering report evaluating AKART for fugitive dust control and treatment of runoff from roofs and employee parking lots. SIM is required to complete construction of an approved treatment system by June 1, 2015. Ex. E-1 at 19-20. As provided by WAC 173-220-140, Ecology can impose a compliance schedule for AKART implementation that achieves compliance at the earliest possible date. Ecology initially required SIM to submit its engineering report by January 1, 2014, and complete construction of the selected treatment system by June 1, 2014. SIM requested that Ecology extend the compliance schedule because the company was unable to collect sufficient monitoring data to complete the engineering report. Abbasi Testimony. Under WAC 173-220-190(2):

> The department may, upon request of the permittee, modify a schedule of compliance or an operating condition in an issued permit if it determines good and valid cause exists for such revision (such as an act of God, strike, flood,

> materials shortage, or other event over which the permittee has little or no control and for which there is no other reasonably available remedy).

See also 40 C.F.R. § 122.62(a)(4). Ecology concluded that, under the circumstances, SIM's request was appropriate. Abbasi Testimony. Ecology modified the Permit in 2014 to extend the compliance schedule. Exs. E-1 at 20, E-2A at 1.

18.

PSA asserts that a compliance schedule can only be modified under the limited circumstances listed in the regulation. According to PSA, because SIM's inability to collect sufficient monitoring data did not result from an "act of God" or a similar event that SIM could not control, modification of the compliance schedule was not legally justified. The Board concludes that PSA reads the regulation too narrowly. The terms PSA relies on are preceded by the qualifying phrase "such as," which is a term of enlargement rather than restriction. *Cf. Pacific Topsoils, Inc. v. Ecology*, 157 Wn. App. 629, 642, 238 P.3d 1201 (2010), review denied, 171 Wn.2d 1009 (2011) ("includes" is a term of enlargement). The regulation provides Ecology with discretion to grant an extension where the agency finds that "good and valid cause exists." WAC 173-220-190(2). The evidence presented supports Ecology's granting of SIM's request to extend the compliance schedule. The Board concludes that modification was consistent with the requirements of applicable law.

D. Exclusion of critical conditions in mixing zone analysis was not supported by evidence (Issue 6)

19.

The 2013 Permit authorizes a mixing zone for treated wastewater discharged from Outfall

001. Ex. E-1 at 8. The term "mixing zone" refers to the use of the assimilative capacity of natural systems as part of an effective pollution control strategy. *Puget Soundkeeper Alliance v. Ecology*, PCHB Nos. 05-150, 05-151, 06-034 & 06-040 (Finding of Fact, Conclusions of Law, and Order, Jan. 26, 2007)(n. 10). EPA regulations provide that states may include in their state standards implementation policies that include mixing zones. 40 C.F.R. § 131.13. The authority to grant mixing zones in Washington NPDES permits is found in WAC 173-201A-400. The regulation provides that mixing zones may be granted "as appropriate" in discharge permits, but only *after* a discharge meets AKART, and only if "the supporting information clearly indicates a mixing zone would not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem or adversely affect public health as determined by [Ecology]." WAC 173-201A-400(2), (4). Mixing zones are meant to be exceptions to water quality standards and, as such, they must be carefully limited in their application. WAC 173-201A-400(7), (8).

20.

PSA asserts that SIM does not meet the regulatory requirements for obtaining a mixing zone and that the Mixing Zone Study which developed the dilution factors is flawed. With the exception of PCBs, discussed below in Section E., and the exclusion of critical discharge scenarios from the Mixing Zone Study, the Board concludes that PSA has not met its burden on this issue. The mixing zone applies to SIM's discharge of treated wastewater from Outfall 001. As discussed above, the Board finds that SIM has implemented AKART for its discharge from Outfall 001. The evidence also established that SIM's consultant used the appropriate version of

the CORMIX model for the site in the Mixing Zone Study. Responding to Mr. LaLiberte's criticism of various data inputs (*e.g.*, wind speed, water temperature), SIM's consultant reran the model using the current version, CORMIX 8, and concluded that use of revised data did not substantially change the dilution factors previously calculated. Geiselbrecht; Ex. S-2. SIM's consultant also rebutted Mr. LaLiberte's assertion that several physical characteristics of the outfall used in the model were incorrect. *Id.*

21.

The granting of a mixing zone, which allows the discharge of pollutants at a greater concentration than the calculated effluent limit, is an exception to the water quality standards and is to be granted sparingly. WAC 173-201A-400(7), (8). Exclusion of the three critical discharge scenarios resulted in a higher dilution factor, allowing SIM to discharge pollutants into the LDW at greater levels. EPA expressed concerns to Ecology about the exclusion of those scenarios. Ecology's own mixing zone expert, Dr. Ahmed, testified that he would have considered all of those critical conditions in the mixing zone analysis. Dr. Ahmed stated that he accepted the exclusion of those scenarios based on the Mixing Zone Study's recommendation that the SIM's Stormwater Treatment Engineering Report would evaluate the possibility of minimizing discharges when the outfall was partially submerged. Ahmed Testimony. The report, however, did not evaluate ways to minimize the occurrence of discharges when the outfall was partially submerged as Dr. Ahmed had anticipated. Instead, SIM's Stormwater Treatment Engineering Report's evaluation of this issue consisted of calculating the percentage of time the system was discharging to a submerged outfall and determining that it occurred less than one percent of the

time. Based on this analysis, the report summarily concluded that it is unfeasible to develop "system and logic controls to anticipate and adjust for these conditions[.]" Ex. S-8 at 6-5.

22.

The Board concludes that the evidence presented did not support Ecology's reliance on SIM's assertion that the three critical conditions were properly excluded from the mixing zone analysis. According to Ecology's Guidance for Conducting Mixing Zone Analyses, "each critical condition (by itself) has a low probability of occurrence." Ex. E-5 at 2. The evidence does not support exclusion of the three critical conditions on the basis that they are rare events.

23.

SIM calculated the likelihood that the omitted critical conditions would happen as less than one percent by predicting the number of instances in which the system would discharge to a submerged outfall and then dividing that number by the total hours in the time period that was measured. The calculation used precipitation information to predict discharges and then looked at tidal data to determine whether a predicted discharge event would occur when the water level at the discharge point was equal to or greater than ten feet. Ex. S-8, Appendix L. When questioned whether the SIM calculation should have included every hour of the time period in the estimate of how likely the critical conditions were to occur, Mr. Shervey testified that SIM's calculation was acceptable because Ecology bases discharge limits on a steady-state discharge. Shervey Testimony. It is unclear to the Board how an assumption of steady-state discharge is consistent with a calculation that is based on predicted discharges during limited predicted events. Dividing a limited number of predicted events by the total hours of the time period may

give an inaccurate representation as to the actual probability of occurrence for the omitted critical conditions.

24.

The Board remands the 2013 Permit to Ecology for reconsideration of the mixing zone analysis for all parameters, with the exception of PCBs, consistent with this opinion. WAC 371-08-540(2). According to Dr. Geiselbrecht, the latest version of the mixing zone model, CORMIX 8, is capable of modeling a partially submerged outfall. Whether the revised mixing zone analysis incorporates the three excluded critical discharge scenarios or the model is re-run using CORMIX 8 is left to Ecology's discretion.

E. SIM's discharge of PCBs does not satisfy requirements for regulatory mixing zone (Issues 3 and 6)

25.

PSA asserts that Ecology's granting of a mixing zone for SIM's discharge of PCBs is contrary to the requirements of WAC 173-201A-400. Based on the evidence presented at the hearing, the Board concludes that PSA has met its burden of proof on this question. The evidence established that elevated levels of PCBs can be found in LDW sediments and fish and shellfish tissue. Exs. E-8 at 22-31, P-89 (Tables 26, 28, 30), P-94 (Table A-1). A DOH Fish Advisory is in effect warning the public against eating resident fish, shellfish, and crab from the Duwamish River. Exs. P-95, P-97, P-98. EPA and Ecology are actively engaged in clean-up efforts in the LDW, which includes controlling sources of contamination to the waterway. Ex. E-8 at 1. EPA and City of Seattle sediment samples in catch basins on or in the vicinity of SIM's

facility showed elevated levels of PCBs. Exs. P-15, P-21. Those results led EPA and the City of Seattle to inform SIM of its need to implement effective source control measures to address the discharge of PCBs from its site. *Id.*; Ex. P-26. Because PCBs are found in the types of materials processed by SIM, it is recognized as a potential source of contaminants that may contribute to recontamination of sediments at or near its facility. McCrea Testimony, Horner Testimony, Geiselbrecht Testimony; Ex. P-88 at 23-31. Mr. Abbasi was aware of this information when drafting SIM's 2013 Permit. Abbasi Testimony.

26.

As discussed above, a mixing zone is an exception to the water quality standards that should only be granted in limited instances. WAC 173-201A-400(7), (8). Given their persistence and ability to bioaccumulate and biomagnify, a mixing zone for PCBs should rarely, if ever, be granted. EPA has expressed concerns regarding the appropriateness of mixing zones for PBTs such as PCBs. Exs. P-111 at Section 5.1.2, P-112 (63 Fed. Reg. 36791); P-115 at 11, P-131. When developing an NPDES permit, the permit writer "must consider the effect of the proposed discharge to surface water on the quality of aquatic sediments and limit the concentrations that cause an exceedance of the sediment quality standards[.]" Ex. E-4 at IX-1; WAC 173-204-400.

27.

As stated above, the Board finds that Mr. Abbasi's evaluation of the potential impacts of SIM's discharge on sediment quality in the LDW was inadequate. Ecology failed to present evidence clearly indicating that a mixing zone for SIM's discharge of PCBs into the LDW

"would not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem, or adversely affect public health as determined by the department." WAC 173-201A-400(4). The contaminated status of the LDW is undisputed. Ecology itself is engaged in significant source control efforts intended to stop the introduction of contaminants, including PCBs, into the LDW. The granting of a mixing zone to SIM for PCBs is counterproductive to that effort. The Board concludes that Ecology's granting of a mixing zone for PCBs is contrary to the requirements of WAC 173-201A-400.

28.

In addition to its contention that there should be no mixing zone for PCBs, PSA also asserts that the effluent limit for PCBs in both discharges should be the human health criteria of 0.00017 µg/. Chartrand Testimony. The 2013 Permit contains different numeric effluent limits for PCBs for each discharge stream. The effluent limit for discharges of PCBs from Outfall 001, absent application of the dilution factor from the mixing zone, is 0.00017 µg/L. Ex. E-1 at 6. For Outfall 002 the effluent limit for PCBs is 0.25 µg/L. *Id.* at 7. This limit is based on the method detection limit for Method 608, the test required by the 2013 Permit, and is not a WQBEL. Ecology provided no evidence supporting different effluent limits for PCBs based on their presence in one discharge stream as opposed to another. While the Board concluded that the technology-based limits from the ISGP were acceptable interim limits for Outfall 002, the effluent limit for PCBs for that discharge is not based on technology and does not warrant the same conclusion.

29.

The Board recognizes that different testing methods can detect PCBs at different levels of concentration. The Board is also aware that Method 608 is the only testing method currently approved by EPA for use in NPDES permits for compliance purposes. However, those facts in and of themselves do not support a higher effluent limit for PCBs in SIM's discharge to Outfall 002. Mr. Shervey testified that requesting approval from EPA to use the more sensitive Method 8082A throughout the Duwamish River would be a worthy proposal as it is currently being used by several government agencies. Although the Board lacks the authority to require Ecology to petition EPA to allow the use of Method 8082A, we encourage Ecology to consider making such a request. The Board remands the 2013 Permit to Ecology for revision of the effluent limits for PCBs consistent with this decision.

F. 2013 Permit Conditions S8, S9, and S15 (Issue 12(a))

30.

In Issue 12(a), PSA challenged Conditions S8, S9, and S15 of the 2013 Permit governing shoreline cleanup and barge loading. The only evidence presented by PSA that touched on Issue 12(a) was brief testimony stating that a PSA member observed scrap metal fall into LDW when being loaded onto a barge and two photographs of SIM's crane with scrap metal in the grabber. Fredrickson Testimony; Exs. P-64, P-65. The Board concludes that PSA did not meet its burden of proof on Issue 12(a).

31.

Any Finding of Fact deemed to be a Conclusion of Law is hereby adopted as such.

Having so found and concluded, the Board enters the following

ORDER

Having concluded that portions of NPDES Permit No. WA0031968 are invalid, the Board REMANDS the Permit to Ecology pursuant to WAC 371-08-540, for reissuance consistent with this opinion:

1. Ecology and SIM shall revise the mixing zone analysis for all parameters, with the exception of PCBs, consistent with this opinion.
2. Ecology shall modify Condition S1.A consistent with this opinion.
3. Ecology shall modify Condition S1.B consistent with opinion.

SO ORDERED this 23rd day of July, 2015.

POLLUTION CONTROL HEARINGS BOARD

JOAN M. MARCHIORO, Chair

THOMAS C. MORRILL, Member

KAY M. BROWN, Member

OFFICE OF THE CITY ATTORNEY
Peter S. Holmes, WSBA # 15787
Laura B. Wishik, WSBA #16682
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

BARON & BUDD, P.C.
Scott Summy *(pending Pro Hac Vice)*
(Texas Bar No. 19507500)
Carla Burke *(pending Pro Hac Vice)*
(Texas Bar No. 24012490)
Celeste Evangelisti *(pending Pro Hac Vice)*
(CA Bar No. 225232)
3102 Oak Lawn Avenue, Suite 1100
Dallas, Texas 75219-4281
Telephone: (214) 521-3605

GOMEZ TRIAL ATTORNEYS
John H. Gomez *(pending Pro Hac Vice)*
(CA Bar No. 171485)
John P. Fiske *(pending Pro Hac Vice)*
(CA Bar No. 249256)
655 West Broadway, Suite 1700
San Diego, CA 92101
Telephone: (619) 237-3490

Attorneys for Plaintiff

UNITED STATES DISTRICT COURT

WESTERN DISTRICT OF WASHINGTON

CITY OF SEATTLE, a municipal corporation located in the County of King, State of Washington, Plaintiffs, v. MONSANTO COMPANY, SOLUTIA INC., and PHARMACIA CORPORATION, and DOES 1 through 100, Defendants.	CASE NO. _____ **PLAINTIFF'S ORIGINAL COMPLAINT**

///

///

I. INTRODUCTION

1. Polychlorinated biphenyls (or "PCBs") are man-made chemical compounds that have become notorious as global environmental contaminants — found in bays, oceans, rivers, streams, soil, and air. As a result, PCBs have been detected in the tissues of all living beings on earth including all forms of marine life, various animals and birds, plants and trees, and humans.

2. The extent of environmental PCB contamination is troubling because PCBs cause a variety of adverse health effects. In humans, PCB exposure is associated with cancer as well as serious non-cancer health effects, including effects on the immune system, reproductive system, nervous system, endocrine system and other health effects. In addition, PCBs destroy populations of fish, birds, and other animal life.

3. Monsanto Company was the sole manufacturer of PCBs in the United States from 1935 to 1979, and trademarked the name "Aroclor" for certain PCB compounds. Although Monsanto knew for decades that PCBs were toxic and knew that they were widely contaminating all natural resources and living organisms, Monsanto concealed these facts and continued producing PCBs until Congress enacted the Toxic Substances Control Act ("TSCA"), which banned the manufacture and most uses of PCBs as of January 1, 1979.

4. PCBs were used in many industrial and commercial applications such as paint, caulking, transformers, capacitors, coolants, hydraulic fluids, plasticizers, sealants, inks, lubricants, and other uses. PCBs regularly leach, leak, off-gas, and escape their intended applications, contaminating runoff during naturally occurring storm and rain events.

5. As a result, PCBs contaminate City streets, the City's drainage systems, stormwater, and water bodies within the City of Seattle.

6. The Duwamish River runs through the heart of the City of Seattle. At the mouth of the Duwamish is Harbor Island, bounded on one side by the East Waterway and on the other side by the West Waterway. Beginning at the upstream end of Harbor Island and continuing for about six miles upstream is a section known as the Lower Duwamish.

7. PCBs were detected in seventy-five percent of more than 1,000 samples collected from catch basins and drainage lines in the Lower Duwamish drainage area. In the East Waterway

GOMEZ TRIAL ATTORNEYS
OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

drainage areas, PCBs were detected in eighty-two percent of samples collected with "in-line grabs" of sediment in drainage pipes and PCBs were detected in seventy-three percent of samples collected from catch basins in street right-of-ways.

8. The City has incurred costs to identify and reduce sources of PCBs entering its stormwater and wastewater systems. The Washington Department of Ecology is requiring the City to increase its efforts to reduce PCBs entering its drainage systems. The City will continue to incur costs to do so.

9. Under a Consent Decree jointly issued by EPA and the Washington Department of Ecology, the City will be constructing a stormwater treatment plant adjacent to the Lower Duwamish River. The plant is designed to remove PCBs from stormwater. The cost for the plant is currently estimated to be nearly $27 Million. The plant will treat stormwater from 1.25 percent of the 20,000 acres that drain to the Lower Duwamish.

10. The Lower Duwamish is listed on the National Priorities List as a Superfund Site. The City is subject to an administrative order issued jointly by the United States Environmental Protection Agency and the Washington Department of Ecology that required extensive investigation of contamination in the Lower Duwamish and preparation of a Feasibility Study identifying remedial options. The City is continuing to incur costs to implement the order and will incur costs to implement the remedy selected by EPA.

11. In November 2014, EPA issued its Record of Decision for the Lower Duwamish. EPA selected a remedy that EPA estimates will cost $342 million.

12. The City also incurred millions of dollars investigating and remediating four specific areas, called Early Action Areas, within the Lower Duwamish Site that were contaminated with PCBs, including property that the City owns in Slip 4 and City streets adjacent to Terminal 117.

13. The other two Early Action Areas were adjacent to outfalls where discharges from the City's drainage system were contaminated with PCBs through no fault of the City.

14. The East Waterway also is listed on the National Priorities List as a Superfund Site. PCBs are a primary contaminant of concern. Some of the PCB contamination got into sediments in the East Waterway through stormwater and combined sewer overflows.

GOMEZ
TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

15. The City is paying a substantial portion of the costs to investigate contamination in the East Waterway and identify remedial options. The current draft of the Feasibility Study identifies remedial options that range in cost from $267 million to $443 million. The City will continue incurring costs to complete the Feasibility Study and to implement the remedy that EPA selects.

Plaintiff CITY OF SEATTLE hereby alleges, upon information and belief, as follows:

II. PARTIES

16. The CITY OF SEATTLE ("Seattle," "City," or "Plaintiff") is a municipal corporation, duly organized and existing by virtue of the laws of the State of Washington.

17. The City brings this suit pursuant to RCW 7.48.010, et al. and any other applicable codes or forms of relief available for monetary damages and removal of the public nuisance caused by Monsanto's PCBs.

18. Seattle has three types of drainage systems: a municipal separated stormwater system (MS4), a partially separated system, and a combined sewer system that collects stormwater and sewage. The City's combined system is connected to trunk lines operated by King County that go to wastewater treatment plants. Heavy rains cause the combined system to overflow through Combined Sewer Outfalls ("CSOs").

19. In order to discharge stormwater from the MS4, Seattle is subject to a Phase I Municipal Stormwater Permit issued by the State of Washington, Department of Ecology, pursuant to the National Pollutant Discharge Elimination System under the Clean Water Act.

20. Seattle's other systems are subject to the National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit (WDR) WA0031682.

21. The City currently has one CSO outfall in the Lower Duwamish. The City's MS4 system discharges stormwater into the Lower Duwamish through 17 outfalls that the City owns and 12 outfalls owned by others. The City also has CSO and stormwater outfalls in the East Waterway.

22. The City of Seattle has spent and will continue to spend significant money to reduce PCBs in its discharges. Under a Consent Decree regarding the City's combined sewer overflows (CSOs), the U.S. Environmental Protection Agency ("EPA") has approved the City's plan to build a

GOMEZ
TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

stormwater treatment plant adjacent to the Lower Duwamish. The plant will treat stormwater for PCBs. The cost for treating stormwater from this one drainage basin is currently estimated to be $26,899,672. This drainage basin contains just 1.25 percent of the twenty thousand acres that drain to the Lower Duwamish.

23. In November 2014, EPA issued its Record of Decision selecting a remedy for the Lower Duwamish. EPA identified PCBs in the Lower Duwamish as a significant threat to human health and the environment.

24. Fish and shellfish that reside in the Lower Duwamish are contaminated with PCBs at levels that make them unfit for human consumption. Despite warnings, people continue to eat them. Many residents of the City of Seattle, particularly people who are recent immigrants or low income, depend on fish and shellfish from the Lower Duwamish as a significant food source.

25. Puget Sound is a Category 5 "impaired" water body for PCBs through at least one medium: wildlife tissue. PCBs are found in the tissue of harbor seal pups in South Central Puget Sound.

26. Defendant Monsanto Company ("Monsanto") is a Delaware corporation with its principal place of business in St. Louis, Missouri.

27. Defendant Solutia Inc. ("Solutia") is a Delaware corporation with its headquarters and principal place of business in St. Louis, Missouri.

28. Defendant Pharmacia LLC (formerly known as "Pharmacia Corporation" and successor to the original Monsanto Company) is a Delaware LLC with its principal place of business in Peapack, New Jersey. Pharmacia is now a wholly-owned subsidiary of Pfizer, Inc. The City is not asserting claims against Pharmacia for costs of investigating and remediating contamination in the Lower Duwamish. In all other respects the City's claims apply to Pharmacia.

29. The original Monsanto Company ("Old Monsanto") operated an agricultural products business, a pharmaceutical and nutrition business, and a chemical products business. Old Monsanto began manufacturing PCBs in the 1930s and continued to manufacture commercial PCBs until the late 1970s.

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

30. Through a series of transactions beginning in approximately 1997, Old Monsanto's businesses were spun off to form three separate corporations. The corporation now known as Monsanto operates Old Monsanto's agricultural products business. Old Monsanto's chemical products business is now operated by Solutia. Old Monsanto's pharmaceuticals business is now operated by Pharmacia.

31. Solutia was organized by Old Monsanto to own and operate its chemical manufacturing business. Solutia assumed the operations, assets, and liabilities of Old Monsanto's chemicals business.[1]

32. Although Solutia assumed and agreed to indemnify Pharmacia (then known as Monsanto Company) for certain liabilities related to the chemicals business, Defendants have entered into agreements to share or apportion liabilities, and/or to indemnify one or more entity, for claims arising from Old Monsanto's chemical business --- including the manufacture and sale of PCBs.[2]

33. In 2003, Solutia filed a voluntary petition for reorganization under Chapter 11 of the U.S. Bankruptcy Code. Solutia's reorganization was completed in 2008. In connection with Solutia's Plan of Reorganization, Solutia, Pharmacia and New Monsanto entered into several agreements under which Monsanto continues to manage and assume financial responsibility for certain tort litigation and environmental remediation related to the Chemicals Business.[3]

34. Monsanto, Solutia, and Pharmacia are collectively referred to in this Complaint as "Defendants."

---

[1] See MONSANTO COMPANY'S ANSWER TO THE COMPLAINT AND JURY DEMAND, *Town of Lexington v. Pharmacia Corp., Solutia, Inc., and Monsanto Company*, C.A. No. 12-CV-11645, D. Mass. (October 8, 2013); see also Relationships Among Monsanto Company, Pharmacia Corporation, Pfizer Inc., and Solutia Inc., http://www.monsanto.com/whoweare/pages/monsanto-relationships-pfizer-solutia.aspx (last accessed January 20, 2016).

[2] *See id.*

[3] *See* Monsanto's Form 8-K (March 24, 2008), and Form 10-Q (June 27, 2008), available at http://www.monsanto.com/investors/pages/sec-filings.aspx (last accessed January 20, 2016).

GOMEZ
TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

III. JURISDICTION AND VENUE

35. This Court has jurisdiction pursuant to 28 U.S.C. §1332 because complete diversity exists between Plaintiff and Defendants. The Plaintiff is located in Washington, but no Defendant is a citizen of Washington. Monsanto is a Delaware corporation with its principal place of business in St. Louis, Missouri. Solutia is a Delaware corporation with its principal place of business in St. Louis, Missouri. Pharmacia is a Delaware limited liability company with its principal place of business in Peapack, New Jersey.

36. Venue is appropriate in this judicial district pursuant to 28 U.S.C. section 1391(a) because a substantial part of the property that is the subject of the action is situated in this judicial district.

IV. FACTUAL ALLEGATIONS

A. PCBs are Toxic Chemicals that Cause Environmental Contamination.

37. Polychlorinated biphenyl, or "PCB," is a molecule comprised of chlorine atoms attached to a double carbon-hydrogen ring (a "biphenyl" ring). A "PCB congener" is any single, unique chemical compound in the PCB category. Over two hundred congeners have been identified.[4]

38. PCBs were generally manufactured as mixtures of congeners. From approximately 1935 to 1979, Monsanto Company was the only manufacturer in the United States that intentionally produced PCBs for commercial use.[5] The most common trade name for PCBs in the United States was "Aroclor," which was trademarked by Old Monsanto.

39. Monsanto's commercially-produced PCBs were used in a wide range of industrial applications in the United States including electrical equipment such as transformers, motor start capacitors, and lighting ballasts. In addition, PCBs were incorporated into a variety of products such

[4] Table of PCB Congeners, available at http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/congeners.htm (last accessed February 20, 2014).

[5] *See* 116 Cong. Record 11695, 91st Congress, (April 14, 1970) ("Insofar as the Monsanto Co., the sole manufacturer of PCB's is concerned . . . ."); 121 Cong. Record 33879, 94th Congress, (October 23, 1975) ("The sole U.S. producer, Monsanto Co. . . . ."). *See also* MONS 058730-058752 at 058733 (identifying other producers as "all ex-USA.").

GOMEZ TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

as caulks, paints, and sealants.

40. As used in this Complaint, the terms "PCB," "PCBs," "PCB-containing products," and "PCB products" refer to products containing polychlorinated biphenyl congener(s) manufactured for placement into trade or commerce, including any product that forms a component part of or that is subsequently incorporated into another product.

41. PCBs easily migrate out of their original source material or enclosure and contaminate nearby surfaces, air, water, soil, and other materials. For example, PCB compounds volatilize out of building materials (such as caulk) into surrounding materials such as masonry, wood, drywall, and soil, thereby causing damage to those surrounding materials. PCBs can also escape from totally-enclosed materials (such as light ballasts) and similarly contaminate and damage surrounding materials.

42. PCBs present serious risks to the health of humans, wildlife, and the environment.

43. Humans may be exposed to PCBs through ingestion, inhalation, and dermal contact. Individuals may inhale PCBs that are emitted into the air. They may also ingest PCBs that are emitted into air and settle onto surfaces that come into contact with food or drinks. And they may absorb PCBs from physical contact with PCBs or PCB-containing materials.

44. EPA has determined that Monsanto's PCBs are probable human carcinogens. In 1996, EPA reassessed PCB carcinogenicity, based on data related to Aroclors 1016, 1242, 1254, and 1260. [6] EPA's cancer reassessment was peer reviewed by 15 experts on PCBs, including scientists from government, academia and industry, all of whom agreed that PCBs are probable human carcinogens.

45. The International Agency for Research on Cancer published an assessment in 2015 that asserts an even stronger relationship between PCBs and human cancer. The report explains: "There is sufficient evidence in humans for the carcinogenicity of polychlorinated biphenyls (PCBs). PCBs cause malignant melanoma. Positive associations have been observed for non-Hodgkin lymphoma and

[6] EPA, PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures, EPA/600/P-96/001F (September 1996), available at http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/pcb.pdf (last accessed January 20, 2016).

GOMEZ
TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

cancer of the breast. ... PCBs are carcinogenic to humans ... ."[7]

46. In addition, EPA concluded that PCBs are associated with serious non-cancer health effects. From extensive studies of animals and primates using environmentally relevant doses, EPA has found evidence that PCBs exert significant toxic effects, including effects on the immune system, the reproductive system, the nervous system, and the endocrine system.

47. PCBs affect the immune system by causing a significant decrease in the size of the thymus gland, lowered immune response, and decreased resistance to viruses and other infections. The animal studies were not able to identify a level of PCB exposure that did not affect the immune system. Human studies confirmed immune system suppression.

48. Studies of reproductive effects in human populations exposed to PCBs show decreased birth weight and a significant decrease in gestational age with increasing exposures to PCBs. Animal studies have shown that PCB exposures reduce birth weight, conception rates, live birth rates, and reduced sperm counts.

49. Human and animal studies confirm that PCB exposure causes persistent and significant deficits in neurological development, affecting visual recognition, short-term memory, and learning. Some of these studies were conducted using the types of PCBs most commonly found in human breast milk.

50. PCBs may also disrupt the normal function of the endocrine system. PCBs have been shown to affect thyroid hormone levels in both animals and humans. In animals, decreased thyroid hormone levels have resulted in developmental deficits, including deficits in hearing. PCB exposures have also been associated with changes in thyroid hormone levels in infants in studies conducted in the Netherlands and Japan.

51. PCBs have been associated with other health effects including elevated blood pressure, serum triglyceride, and serum cholesterol in humans; dermal and ocular effects in monkeys and humans; and liver toxicity in rodents.

[7] International Agency for Research on Cancer. IARC monographs on the evaluation of carcinogenic risks to humans, volume 107. Polychlorinated and Polybrominated Biphenyls (2015), available at http://monographs.iarc.fr/ENG/Monographs/vol107/ (last accessed January 20, 2016).

GOMEZ
TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

52. Children may be affected to a greater extent than adults. The Agency for Toxic Substances and Disease Registry explained: "Younger children may be particularly vulnerable to PCBs because, compared to adults, they are growing more rapidly and generally have lower and distinct profiles of biotransformation enzymes, as well as much smaller fat deposits for sequestering the lipophilic PCBs."[8]

53. PCBs are known to be toxic to a number of aquatic species and wildlife including fish, marine mammals, reptiles, amphibians, and birds. Exposure is associated with death, compromised immune system function, adverse effects on reproduction, development, and endocrine function. PCB exposure affects liver function, the digestive system, and nervous systems and can promote cancer in a number of animal species. The presence of PCBs can cause changes in community and ecosystem structure and function.[9]

B. Monsanto Has Long Known of PCBs' Toxicity.

54. Monsanto was well aware of scientific literature published in the 1930s that established that inhalation in industrial settings resulted in toxic systemic effects.

55. An October 11, 1937, Monsanto memorandum advises that "Experimental work in animals shows that prolonged exposure to Aroclor vapors evolved at high temperatures or by repeated oral ingestion will lead to systemic toxic effects. Repeated bodily contact with the liquid Aroclors may lead to an acne-form skin eruption."[10]

56. A September 20, 1955, memo from Emmet Kelly set out Monsanto's position with respect to PCB toxicity: "We know Aroclors are toxic but the actual limit has not been precisely defined. It does not make too much difference, it seems to me, because our main worry is what will

---

[8] Agency for Toxic Substances and Disease Registry, Toxicological Profile for Polychlorinated Biphenyls (PCBs), (November 2000), at 381, available at www.atsdr.cdc.gov (last accessed January 20, 2016).

[9] *See* EPA, Understanding PCB Risks, available at http://www.epa.gov/ge-housatonic/understanding-pcb-risks-ge-pittsfieldhousatonic-river-site#WildlifeHumanHealthEffects (last accessed January 20, 2016).

[10] MONS 061332.

GOMEZ TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

happen if an individual develops [*sic*] any type of liver disease and gives a history of Aroclor exposure. I am sure the juries would not pay a great deal of attention to [maximum allowable concentrates]."[11]

57. On November 14, 1955, Monsanto's Medical Department provided an opinion that workers should not be allowed to eat lunch in the Aroclor department:

> It has long been the opinion of the Medical Department that eating in process departments is a potentially hazardous procedure that could lead to serious difficulties. While the Aroclors are not particularly hazardous from our own experience, this is a difficult problem to define because early literature work claimed that chlorinated biphenyls were quite toxic materials by ingestion or inhalation.[12]

58. On January 21, 1957, Emmet Kelly reported that after conducting its own tests, the U.S. Navy decided against using Monsanto's Aroclors: "No matter how we discussed the situation, it was impossible to change their thinking that Pydraul 150 is just too toxic for use in a submarine."[13]

59. In 1966, Kelly reviewed a presentation by Swedish researcher Soren Jensen, who stated that PCBs "appeared to be the most injurious chlorinated compounds of all tested."[14] Jensen refers to a 1939 study associating PCBs with the deaths of three young workers and concluding that "pregnant women and persons who have at any time had any liver disease are particularly susceptible."[15] Kelly does not dispute any of Jensen's remarks, noting only, "As far as the section on toxicology is concerned, it is true that chloracne and liver trouble can result from large doses."[16]

60. On January 29, 1970, Elmer Wheeler of the Medical Department circulated laboratory reports discussing results of animal studies. He noted: "Our interpretation is that the PCB's are

---

[11] MONS 095196-7.

[12] Monsanto Chemical Company, Memorandum to H.B. Patrick, November 14, 1955 (no Bates number).

[13] MONS 095640.

[14] *See* JDGFOX00000037-63.

[15] *Id*. at JDGFOX00000039.

[16] *Id*. at JDGFOX00000037.

GOMEZ
TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

exhibiting a greater degree of toxicity in this chronic study than we had anticipated. Secondly, although there are variations depending on species of animals, the PCB's are about the same as DDT in mammals."[17]

C. Monsanto Has Long Known that PCBs Were "Global Contaminants" Causing Harm to Animals and Fish.

61. At the same time, Monsanto became aware that PCBs were causing widespread contamination of the environment, far beyond the areas of its use.

62. Monsanto's Medical Director reviewed an article by Swedish researcher Soren Jensen, who reported the detection of PCBs in the tissues of fish and wildlife in Sweden.[18] The report noted that PCBs were also detected in the air over London and Hamburg and found in seals caught off the coast of Scotland. Jensen concluded that PCBs can "be presumed to be widespread throughout the world."[19]

63. A December 1968 article by Richard Risebrough identified chlorinated hydrocarbons (which include PCBs) as "the most abundant synthetic pollutants present in the global environment."[20] The article reported finding significant concentrations of PCBs in the bodies and eggs of peregrine falcons and 34 other bird species. The report linked PCBs to the rapid decline in peregrine falcon populations in the United States.

64. On March 6, 1969, Monsanto employee W. M. Richard wrote a memorandum discussing Risebrough's article that criticized PCBs as a "toxic substance", "widely spread by air-water; therefore, an uncontrollable pollutant . . . causing extinction of peregrine falcon … [and] endangering man himself."[21] Richard explained that Monsanto could take steps to reduce PCB

---

[17] MONS 098480

[18] New Scientist (December 15, 1966), MONSFOX00003427.

[19] *Id.*

[20] R.W. Risebrough, Polychlorinated Biphenls in the Global Ecosystem, Nature, Vol. 220 (December 14, 1968).

[21] MONS 096509-096511.

GOMEZ TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

releases from its own plants but cautioned, "It will be still more difficult to control other end uses such as cutting oils, adhesives, plastics, and NCR paper. In this applications exposure to consumers is greater and the disposal problem becomes complex."[22]

65. On September 9, 1969, Monsanto employee W.R. Richard wrote an interoffice memo titled "Defense of Aroclor."[23] He acknowledged the role of Aroclor in water pollution: "Aroclor product is refractive, will settle out on solids – sewerage sludge – river bottoms, and apparently has a long life." He noted that Aroclors 1254 and 1260 had been found along the Gulf Coast of Florida causing a problem with shrimp; in San Francisco Bay, where it was reported to thin egg shells in birds; and in the Great Lakes. Richard advised that the company could not defend itself against all criticism: "We can't defend vs. everything. Some animals or fish or insects will be harmed. Aroclor degradation rate will be slow. Tough to defend against. Higher chlorination compounds will be worse [than] lower chlorine compounds. Therefore we will have to restrict uses and clean-up as much as we can, starting immediately."[24]

66. The Aroclor Ad Hoc Committee held its first meeting on September 5, 1969. The committee's objectives were to continue sales and profits of Aroclors in light of the fact that PCB "may be a global contaminant."[25] The meeting minutes acknowledge that PCB has been found in fish, oysters, shrimp, birds, along coastlines of industrialized areas such as Great Britain, Sweden, Rhine River, low countries, Lake Michigan, Pensacola Bay, and in Western wildlife. Moreover, the committee implicated the normal use of PCB-containing products as the cause of the problem: "In one application alone (highway paints), one million lbs/year are used. Through abrasion and leaching we can assume that nearly all of this Aroclor winds up in the environment."[26]

---

[22] *Id.*

[23] DSW 014256-014263.

[24] *Id.*

[25] MONS 030483-030486.

[26] *Id.*at 030485.

GOMEZ
TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

67. A month later, on October 2, 1969, the Committee reported extensive environmental contamination. The U.S. Department of Interior, Fish and Wildlife found PCB residues in dead eagles and marine birds. Similarly, the Bureau of Commercial Fisheries reported finding PCBs in the river below Monsanto's Pensacola plant. The U.S. Food and Drug Administration had discovered PCBs in milk supplies. The Committee advised that Monsanto could not protect the environment from Aroclors as "global" contaminants but could protect the continued manufacture and sale of Aroclors:

> There is little probability that any action that can be taken will prevent the growing incrimination of specific polychlorinated biphenyls (the higher chlorinated – e.g. Aroclors 1254 and 1260) as nearly global environmental contaminants leading to contamination of human food (particularly fish), the killing of some marine species (shrimp), and the possible extinction of several species of fish eating birds.
> Secondly, the committee believes that there is no practical course of action that can so effectively police the uses of these products as to prevent environmental contamination. There are, however a number of actions which must be undertaken to prolong the manufacture, sale and use of these particular Aroclors as well as to protect the continued use of other members of the Aroclor series.[27]

68. Despite growing evidence of PCBs' infiltration of every level of the global ecology, Monsanto remained steadfast in its production of Aroclors and other PCBs.

69. Monsanto expressed a desire to keep profiting from PCBs despite the environmental havoc in a PCB Presentation to Corporate Development Committee. The report suggests possible reactions to the contamination issue. It considered that doing nothing was "unacceptable from a legal, moral, and customer public relations and company policy viewpoint." But the option of going out of the Aroclor business was also considered unacceptable: "there is too much customer/market need and selfishly too much Monsanto profit to go out."[28]

70. Monsanto's desire to protect Aroclor sales rather than the environment is reflected in the Committee's stated objectives:

1. Protect continues sales and profits of Aroclors;
2. Permit continued development of new uses and sales, and

[27] DSW 014612-014624, at 014615.

[28] MONS 058737.

GOMEZ
TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

> 3. Protect the image of the Organic Division and the Corporation as members of the business community recognizing their responsibilities to prevent and/or control contamination of the global ecosystem.[29]

71. An interoffice memorandum circulated on February 16, 1970, provided talking points for discussions with customers in response to Monsanto's decision to eliminate Aroclors 1254 and 1260: "We (your customer and Monsanto) are not interested in using a product which may present a problem to our environment." Nevertheless, the memo acknowledges that Monsanto "can't afford to lose one dollar of business." To that end, it says, "We want to avoid any situation where a customer wants to return fluid. . . . We would prefer that the customer use up his current inventory and purchase [new products] when available. He will then top off with the new fluid and eventually all Aroclor 1254 and Aroclor 1260 will be out of his system. We don't want to take fluid back."[30]

72. Even worse, Monsanto instructed its customers to dispose of PCB containing material in local landfills, knowing that landfills were not suitable for PCB contaminated waste. Monsanto had determined that the only effective mothed of disposing of PCBs was incineration, and it constructed an incinerator for disposal of its own PCB contaminants. Nevertheless, as William Papageorge explained in his 1975 testimony before the Department of Natural Resources, Monsanto instructed its customers to dispose of PCB contaminated waste in landfills: "lacking that resource [a commercial incinerator], we have to reluctantly suggest, because we don't have a better answer, that they find a well operated, properly operated landfill and dispose of the material in that fashion."[31]

73. In 1970, the year after Monsanto formed the "ad hoc" committee, and despite Monsanto's knowledge of the global reach of PCB contamination, PCB production in the United States peaked at 85 million pounds.

74. Growing awareness of the ubiquitous nature of PCBs led the Unites States to conduct an investigation of health and environmental effects and contamination of food and other products. An

---

[29] *Id.*

[30] MONS 100123-100124.

[31] *See* Testimony of William Papageorge, Public Hearing to Review and Receive Public Comment Upon Proposed Administrative Rules Relating to the Discharge of Polychlorinated Biphenyls (PCB's) Into the Waters of the State, Before the Department of Natural Resources (August 28-29, 1975).

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

interdepartmental task force concluded in May 1972 that PCBs were highly persistent, could bioaccumulate to relatively high levels, and could have serious adverse health effects on human health.[32]

75. After that report, environmental sampling and studies indicated that PCBs were a "more serious and continuing environmental and health threat than had been originally realized."[33] To address these concerns, EPA undertook a study to assess PCB levels in the environment on a national basis. That study revealed widespread occurrence of PCBs in bottom sediments in several states; in fish and birds; in lakes and rivers; in the Atlantic Ocean, the Pacific Ocean, and the Gulf of Mexico; sewage treatment facilities; in a variety of foods including milk, poultry, eggs, fish, meat, and grains; and in human tissues, blood, hair, and milk.[34]

76. At the same time, Monsanto was promoting the use and sale of Aroclor and other PCB compounds. In a 1960 brochure, Monsanto promotes the use of Aroclors in transformers and capacitors, utility transmission lines, home appliances, electric motors, fluorescent light ballasts, wire or cable coatings, impregnants for insulation, dielectric sealants, chemical processing vessels, food cookers, potato chip fryers, drying ovens, thermostats, furnaces, and vacuum diffusion pumps. Aroclors could also be used, the brochure advertised, as a component of automotive transmission oil; insecticides; natural waxes used in dental casting, aircraft parts, and jewelry; abrasives; specialized lubricants; industrial cutting oils; adhesives; moisture-proof coatings; printing inks; papers; mastics; sealant; caulking compounds; tack coatings; plasticizers; resin; asphalt; paints, varnishes, and lacquers; masonry coatings for swimming pools, stucco homes, and highway paints; protective and decorative coatings for steel structures, railway tank and gondola cars; wood and metal maritime equipment; and coatings for chemical plants, boats, and highway marking. [35]

---

[32] EPA, Review of PCB Levels in the Environment, EPA-560/7-76-001 (January 1976).

[33] *Id*. at 1.

[34] *Id., passim.*

[35] The Aroclor Compounds (hand dated May 1960), 0509822- 66.

GOMEZ
TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

77. A 1961 brochure explains that Monsanto's Aroclors are being used in "lacquers for women's shoes," as "a wax for the flame proofing of Christmas trees," as "floor wax," as an adhesive for bookbinding, leather, and shoes, and as invisible marking ink used to make chenille rugs and spreads. [36]

78. Thus, by February 1961, at the latest, Monsanto knew that its Aroclors were being used in a variety of industrial, commercial, household, and consumer goods. Moreover, Monsanto affirmatively encouraged these uses by encouraging salesmen to market products for these and other applications.

79. A few years later, in 1970, Monsanto tried to distance itself from the variety of applications of Aroclors that it proudly espoused a few years before. In a press release, the company claimed: " 'What should be emphasized . . . is that PCB was developed over 40 years ago primarily for use as a coolant in electrical transformers and capacitors. It is also used in commercial heating and cooling systems. It is not a 'household' item."[37]

D. Monsanto Concealed the Nature of PCBs from Governmental Entities.

80. While the scientific community and Monsanto knew that PCBs were toxic and becoming a global contaminant, Monsanto repeatedly misrepresented these facts, telling governmental entities the exact opposite — that the compounds were not toxic and that the company would not expect to find PCBs in the environment in a widespread manner.

81. In a March 24, 1969 letter to Los Angeles County Air Pollution Control District, Monsanto advised that the Aroclor compounds "are not particularly toxic by oral ingestion or skin absorption."[38] Addressing reports of PCBs found along the West Coast, Monsanto claimed ignorance as to their origin, explaining that "very little [Aroclor] would normally be expected either in the air or in the liquid discharges from a using industry."[39] A similar letter to the Regional Water Quality

[36] Plasticizer Patter (February 1961), 0627503-21.

[37] *See* Press release (July 16, 1970), MCL000647-50.

[38] Letter from Monsanto to Los Angeles County Air Pollution Control District (March 24, 1969).

[39] *Id.*

GOMEZ TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

Control Board explained that PCBs are associated with "no special health problems" and "no problems associated with the environment."[40]

82. In May, 1969, Monsanto employee Elmer Wheeler spoke with a representative of the National Air Pollution Control Administration, who promised to relay to Congress the message that Monsanto "cannot conceive how the PCBs can be getting into the environment in a widespread fashion."[41]

83. Monsanto delivered the same message to the New Jersey Department of Conservation in July, 1969, claiming first, "Based on available data, manufacturing and use experience, we do not believe the PCBs to be seriously toxic."[42] The letter then reiterates Monsanto's position regarding environmental contamination: "We are unable at this time to conceive of how the PCBs can become wide spread in the environment. It is certain that no applications to our knowledge have been made where the PCBs would be broadcast in the same fashion as the chlorinated hydrocarbon pesticides have been."[43]

E. The Duwamish River is "Impaired" Due to PCB Contamination

84. As described above, PCBs enter the City's stormwater and wastewater systems through no fault of the City of Seattle. The City then lawfully discharges wastewater and stormwater into the Duwamish River in accordance with its NDPES permits.

85. Under the Clean Water Act, Washington State has designated uses for the Lower Duwamish and the East Waterway that include commercial, recreation, navigation, boating, fishing, shellfish harvesting, and wildlife habitat. It is also part of the Muckleshoot Tribe's commercial, ceremonial, and subsistence fishing area.[44]

---

[40] Letter from Monsanto to State of California Resources Agency (March 27, 1969).

[41] Monsanto Memorandum to W.R. Richard (May 26, 1969).

[42] Letter from Monsanto to Department of Conservation and Economic Development (July 23, 1969).

[43] *Id.*

[44] U.S. Environmental Protection Agency, *Record of Decision — Lower Duwamish Waterway Superfund Site.* WA00002329803 (November 2014) at 34, available at

GOMEZ TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

86. The Lower Duwamish and the East Waterway are listed on the Washington State Water Quality Assessment list of impaired water bodies, in accordance with section 303(d) of the Clean Water Act, due to PCBs in sediments.[45]

87. PCBs are the most widespread contaminant in Lower Duwamish sediment, found in 94% of the surface sediment locations sampled for PCBs and 48% of the subsurface sediment samples.[46]

88. The Washington State Department of Health advises "no consumption of resident fish and shellfish from the LDW,"[47] due to elevated PCB levels.

89. The City has participated in cleanups of PCB-contaminated sediment from the Lower Duwamish Waterway.[48]

90. PCB was also detected in almost all samples of fish, shellfish, and benthic invertebrate tissues. [49] EPA identified PCBs as presenting a human health risk for individuals engaged in netfishing, clamming, and beach play.[50]

FIRST CAUSE OF ACTION

PUBLIC NUISANCE

91. Plaintiff realleges and reaffirms each and every allegation set forth in all preceding paragraphs as if fully restated in this cause of action.

---

http://www.epa.gov/region10/pdf/sites/ldw/ROD_final_11-21-2014.pdf (last accessed January 20, 2016).

[45] *Id. at 14.*

[46] *Id*. at 22, 28.

[47] *Id*. at 34.

[48] *Id.* at 5.

[49] *Id*. at 28.

[50] *Id*. at 50-53.

GOMEZ TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

92. The City is not asserting this claim against Pharmacia for costs to investigate and remediate contamination in the Lower Duwamish. In all other respects Pharmacia is subject to this claim.

93. Monsanto manufactured, distributed, marketed, and promoted PCBs in a manner that created or participated in creating a public nuisance that is harmful to health and obstructs the free use of the Duwamish River.

94. Monsanto intentionally manufactured, marketed, and sold PCBs with the knowledge that they were causing global environmental contamination.

95. Monsanto knew that PCBs would likely end up in stormwater systems, waterways, water bodies, sediments, fish and animal tissues.

96. Monsanto's conduct and the presence of PCBs annoys, injures, and endangers the comfort, repose, health, and safety of others.

97. Monsanto's conduct and the presence of PCBs interferes with and obstructs the public's free use and comfortable enjoyment of the Duwamish River for commerce, navigation, fishing, recreation, and aesthetic enjoyment.

98. The presence of PCBs also interferes with the free use of Duwamish River for a healthy ecological environment.

99. Monsanto's conduct and the presence of PCBs in the Duwamish River is injurious to human, animal, and environmental health.

100. An ordinary person would be reasonably annoyed or disturbed by the presence of toxic PCBs that endanger the health of fish, animals, and humans and degrade water quality and marine habitats.

101. The seriousness of the environmental and human health risk far outweighs any social utility of Monsanto's conduct in manufacturing PCBs and concealing the dangers posed to human health and the environment.

102. The rights, interests, and inconvenience to the City of Seattle and general public far outweighs the rights, interests, and inconvenience to Monsanto, which profited heavily from the manufacture of PCBs and which can no longer produce PCBs.

GOMEZ
TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

103. Monsanto's conduct caused and continues to cause harm to Seattle.

104. The City of Seattle suffers damage from Monsanto's PCBs. The City incurs costs to remove PCBs that have invaded its drainage systems and to prevent additional PCBs from entering its systems. Many of the City's streets are contaminated with PCBs that get into the City's drainage systems. The City of Seattle suffers injuries that are different from those suffered by the public at large.

105. Seattle has already incurred costs associated with testing and monitoring for PCBs, reducing PCBs in stormwater, and removing PCBs from the Lower Duwamish Waterway. The Washington Department of Ecology is requiring the City to increase its efforts to identify and reduce sources of PCBs to its drainage systems. Under the EPA/Ecology Consent Decree, Seattle will incur nearly $27 Million to construct a stormwater treatment plant to reduce PCBs in stormwater discharges from one drainage basin adjacent to the Lower Duwamish.

106. The City is incurring and will continue to incur costs to investigate and remediate PCB contamination in the East Waterway.

107. Monsanto knew or, in the exercise of reasonable care, should have known that the manufacture and sale of PCBs was causing and would cause the type of contamination now found in the Duwamish River. Monsanto knew that PCBs would contaminate water supplies, would degrade marine habitats and would endanger birds and animals. In addition, Monsanto knew PCBs are associated with serious illnesses and cancers in humans and that humans may be exposed to PCBs through ingestion of fish and/or dermal contact. As a result, it was foreseeable to Monsanto that humans may be exposed to PCBs through swimming in contaminated waters, playing on contaminated beaches, and by eating fish and shellfish from contaminated areas. Monsanto thus knew, or should have known, that PCB contamination would seriously and unreasonably interfere with the ordinary comfort, use, and enjoyment of any contaminated water body. Monsanto had a duty to cease manufacturing, distributing, selling and promoting PCBs and failed to do so. Monsanto also had a duty to warn about the dangers of PCBs and failed to do so.

108. As a direct and proximate result of Monsanto's creation of a public nuisance, Seattle has suffered, and continues to suffer, monetary damages to be proven at trial.

GOMEZ
TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

SECOND CAUSE OF ACTION

PRODUCTS LIABILITY- DEFECTIVE DESIGN

109. Plaintiff realleges and reaffirms each and every allegation set forth in all preceding paragraphs as if fully restated in this cause of action.

110. The City is not asserting this claim against Pharmacia for costs to investigate and remediate contamination in the Lower Duwamish. In all other respects Pharmacia is subject to this claim.

111. Monsanto's PCBs were not reasonably safe as designed at the time the PCBs left Monsanto's control.

112. PCBs' toxicity and inability to be contained rendered them unreasonably dangerous at all times.

113. Monsanto's PCBs were unsafe as designed as demonstrated by the United State Congress banning the production and sale of PCBs pursuant to the Toxic Substances Control Act in 1979.

114. Due to their toxicity and inability to be contained, Monsanto knew its PCBs were not safe at the time the product was manufactured because it was certain that the product would become a global contaminant and cause toxic contamination of waterways and wildlife, such as Seattle's stormwater and the fish in the Duwamish River, due to the nature of PCBs.

115. Monsanto knew its PCBs were unsafe to an extent beyond that which would be contemplated by an ordinary person because of the overwhelming seriousness of creating global contamination.

116. Monsanto manufactured, distributed, sold, and promoted PCBs despite such knowledge in order to maximize its profits despite the known harm.

117. Monsanto's PCBs caused and continue to cause injury to the City of Seattle.

118. The City of Seattle has suffered and will continue to suffer damages.

THIRD CAUSE OF ACTION

PRODUCTS LIABILITY- FAILURE TO WARN

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

119. Plaintiff realleges and reaffirms each and every allegation set forth in all preceding paragraphs as if fully restated in this count.

120. The City is not asserting this claim against Pharmacia for costs to investigate and remediate contamination in the Lower Duwamish. In all other respects Pharmacia is subject to this claim.

121. Monsanto's PCBs were not reasonably safe because they lacked adequate warnings at the time the PCBs left Monsanto's control.

122. At the time Monsanto manufactured, distributed, sold, and promoted its PCBs, Monsanto knew it was a certainty that PCBs would become a global contaminate and contaminate waterways and wildlife such as Seattle's stormwater and fish in the Duwamish River.

123. Despite Monsanto's knowledge, Monsanto failed to provide adequate warnings that its PCBs would become a global contaminant and contaminate waterways and wildlife, such as Seattle's stormwater and fish in the Duwamish River.

124. Monsanto could have warned of this certainty but intentionally concealed the certainty of global contamination in order to maximize profits.

125. Monsanto learned and concealed the dangers of PCBs after it manufactured, distributed, promoted, and sold PCBs.

126. Without adequate warnings or instructions, Monsanto's PCBs were unsafe to an extent beyond that which would be contemplated by an ordinary person.

127. Monsanto knowingly failed to issue warnings or instructions concerning the dangers of PCBs in the manner that a reasonably prudent manufacturer would act in the same or similar circumstances.

128. Monsanto's PCBs caused and continue to cause injury to the City of Seattle.

129. The City of Seattle has suffered and will continue to suffer damages.

FOURTH CAUSE OF ACTION

NEGLIGENCE

130. Plaintiff realleges and reaffirms each and every allegation set forth in all preceding paragraphs as if fully restates in this count.

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

131. The City is not asserting this claim against Pharmacia for costs to investigate and remediate contamination in the Lower Duwamish. In all other respects Pharmacia is subject to this claim.

132. Monsanto failed to exercise ordinary care because a reasonably careful company that learned of its product's toxicity would not manufacture that product or would warn of its toxic properties.

133. Monsanto failed to exercise ordinary care because a reasonably careful company that learned that its product could not be contained during normal production and use would not continue to manufacture that product or would warn of its dangers.

134. Monsanto failed to exercise ordinary care because a reasonably careful company would not continue to manufacture PCBs in mass quantities and to the extent that Monsanto manufactured them.

135. Monsanto was grossly negligent because it failed to exercise even slight care.

136. Monsanto's negligence caused and continues to cause injury to the City of Seattle.

137. The City of Seattle has suffered and will continue to suffer damages.

FIFTH CAUSE OF ACTION

EQUITABLE INDEMNITY

138. Plaintiff realleges and reaffirms each and every allegation set forth in all preceding paragraphs as if fully restated in this count. The City is not asserting this claim against Pharmacia for costs to investigate and remediate contamination in the Lower Duwamish. In all other respects Pharmacia is subject to this claim.

139. The City of Seattle is subject to an administrative order issued jointly by EPA and the Washington Department of Ecology that required preparation of a Remedial Investigation and a Feasibility Study for the Lower Duwamish. The City is continuing to incur costs to implement further requirements under the order. The City will incur costs to design and implement the remedy.

140. In addition, Seattle has incurred cleanup costs for removing PCB-laden sediments from four Early Action Areas in the Lower Duwamish.

GOMEZ
TRIAL ATTORNEYS

OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200

141. The Washington Department of Ecology is requiring Seattle to increase its efforts to identify and reduce sources of PCBs to its drainage systems.

142. Pursuant to the joint EPA/Ecology Consent Decree, Seattle will be constructing a stormwater treatment plant to remove PCBs in stormwater from one drainage basin adjacent to the Duwamish, at an estimated cost of almost $27 Million.

143. Seattle is paying a substantial portion of costs to investigate contamination in the East Waterway and will continue paying costs to implement the remedy that EPA selects.

144. Monsanto is responsible for the PCB contamination that Seattle must address pursuant to these regulatory requirements.

PRAYER FOR RELIEF

Plaintiff prays for judgment against Defendants, jointly and severally, as follows:

1. Compensatory damages according to proof;
2. Award of the present and future costs to abate the ongoing public nuisance;
3. Declaratory judgment requiring Monsanto to pay for abatement of the ongoing nuisance;
4. Litigation costs and attorney's fees as provided by law;
5. Pre-judgment and post-judgment interest;
6. Any other and further relief as the Court deems just, proper, and equitable.

Dated: January 25, 2016

Respectfully submitted,

PETER S. HOLMES
Seattle City Attorney

By: s/Peter S. Holmes
By: s/Laura B. Wishik
Peter S. Holmes, WSBA # 15787
Laura B. Wishik, WSBA #16682
OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200
Email: Laura.Wishik@seattle.gov

BARON & BUDD, P.C.
Scott Summy *(pending Pro Hac Vice)*
Carla Burke *(pending Pro Hac Vice)*
Celeste Evangelisti *(pending Pro Hac Vice)*

3102 Oak Lawn Avenue, Suite 1100
Dallas, Texas 75219-4281
Telephone: (214) 521-3605
Email: SSummy@baronbudd.com
cburkepickrel@baronbudd.com
cevangelisti@baronbudd.com

GOMEZ TRIAL ATTORNEYS
John H. Gomez *(pending Pro Hac Vice)*
John P. Fiske *(pending Pro Hac Vice)*
655 West Broadway, Suite 1700
San Diego, CA 92101
Telephone: (619) 237-3490
Email: john@gomeztrialattorneys.com
jfiske@gomeztrialattorneys.com

Attorneys for Plaintiff

DEMAND FOR JURY TRIAL

Plaintiff demands a jury trial.

Dated: January 25, 2016

PETER S. HOLMES
Seattle City Attorney

By: s/Peter S. Holmes
By: s/Laura B. Wishik
Peter S. Holmes, WSBA # 15787
Laura B. Wishik, WSBA #16682
OFFICE OF THE CITY ATTORNEY
701 Fifth Avenue, Suite 2050
Seattle, Washington 98104-7097
Telephone: (206) 684-8200
Email: Laura.Wishik@seattle.gov

BARON & BUDD, P.C.
Scott Summy *(pending Pro Hac Vice)*
Carla Burke *(pending Pro Hac Vice)*
Celeste Evangelisti *(pending Pro Hac Vice)*
3102 Oak Lawn Avenue, Suite 1100
Dallas, Texas 75219-4281
Telephone: (214) 521-3605
Email: SSummy@baronbudd.com
cburkepickrel@baronbudd.com
cevangelisti@baronbudd.com

GOMEZ TRIAL ATTORNEYS
John H. Gomez *(pending Pro Hac Vice)*
John P. Fiske *(pending Pro Hac Vice)*
655 West Broadway, Suite 1700
San Diego, CA 92101
Telephone: (619) 237-3490
Email: john@gomeztrialattorneys.com
jfiske@gomeztrialattorneys.com

Attorneys for Plaintiff

CHAPTER 26—WATER POLLUTION PREVENTION AND CONTROL

SUBCHAPTER I—RESEARCH AND RELATED PROGRAMS

SUBCHAPTER II—GRANTS FOR CONSTRUCTION OF TREATMENT WORKS

SUBCHAPTER III—STANDARDS AND ENFORCEMENT

SUBCHAPTER IV—PERMITS AND LICENSES

SUBCHAPTER V—GENERAL PROVISIONS

SUBCHAPTER VI—STATE WATER POLLUTION CONTROL REVOLVING FUNDS

CODIFICATION

The Federal Water Pollution Control Act, comprising this chapter, was originally enacted by act June 30,

1948, ch. 758, 62 Stat. 1155, and amended by acts July 17, 1952, ch. 927, 66 Stat. 755; July 9, 1956, ch. 518, §§1, 2, 70 Stat. 498–507; June 25, 1959, Pub. L. 86–70, 73 Stat. 141; July 12, 1960, Pub. L. 86–624, 74 Stat. 411; July 20, 1961, Pub. L. 87–88, 75 Stat. 204; Oct. 2, 1965, Pub. L. 89–234, 79 Stat. 903; Nov. 3, 1966, Pub. L. 89–753, 80 Stat. 1246; Apr. 3, 1970, Pub. L. 91–224, 84 Stat. 91; Dec. 31, 1970, Pub. L. 91–611, 84 Stat. 1818; July 9, 1971, Pub. L. 92–50, 85 Stat. 124; Oct. 13, 1971, Pub. L. 92–137, 85 Stat. 379; Mar. 1, 1972, Pub. L. 92–240, 86 Stat. 47, and was formerly classified first to section 466 et seq. of this title and later to section 1151 et seq. of this title. The act is shown herein, however, as having been added by Pub. L. 92–500 without reference to such intervening amendments because of the extensive amendment, reorganization, and expansion of the act's provisions by Pub. L. 92–500.

SUBCHAPTER I—RESEARCH AND RELATED PROGRAMS

§ 1251. Congressional declaration of goals and policy

(a) Restoration and maintenance of chemical, physical and biological integrity of Nation's waters; national goals for achievement of objective

The objective of this chapter is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. In order to achieve this objective it is hereby declared that, consistent with the provisions of this chapter—

(1) it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985;

(2) it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983;

(3) it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited;

(4) it is the national policy that Federal financial assistance be provided to construct publicly owned waste treatment works;

(5) it is the national policy that areawide waste treatment management planning processes be developed and implemented to assure adequate control of sources of pollutants in each State;

(6) it is the national policy that a major research and demonstration effort be made to develop technology necessary to eliminate the discharge of pollutants into the navigable waters, waters of the contiguous zone, and the oceans; and

(7) it is the national policy that programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of this chapter to be met through the control of both point and nonpoint sources of pollution.

(b) Congressional recognition, preservation, and protection of primary responsibilities and rights of States

It is the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources, and to consult with the Administrator in the exercise of his authority under this chapter. It is the policy of Congress that the States manage the construction grant program under this chapter and implement the permit programs under sections 1342 and 1344 of this title. It is further the policy of the Congress to support and aid research relating to the prevention, reduction, and elimination of pollution and to provide Federal technical services and financial aid to State and interstate agencies and municipalities in connection with the prevention, reduction, and elimination of pollution.

(c) Congressional policy toward Presidential activities with foreign countries

It is further the policy of Congress that the President, acting through the Secretary of State and such national and international organizations as he determines appropriate, shall take such action as may be necessary to insure that to the fullest extent possible all foreign countries shall take meaningful action for the prevention, reduction, and elimination of pollution in their waters and in international waters and for the achievement of goals regarding the elimination of discharge of pollutants and the improvement of water quality to at least the same extent as the United States does under its laws.

(d) Administrator of Environmental Protection Agency to administer chapter

Except as otherwise expressly provided in this chapter, the Administrator of the Environmental Protection Agency (hereinafter in this chapter called ''Administrator'') shall administer this chapter.

(e) Public participation in development, revision, and enforcement of any regulation, etc.

Public participation in the development, revision, and enforcement of any regulation, standard, effluent limitation, plan, or program established by the Administrator or any State under this chapter shall be provided for, encouraged, and assisted by the Administrator and the States. The Administrator, in cooperation with the States, shall develop and publish regulations specifying minimum guidelines for public participation in such processes.

(f) Procedures utilized for implementing chapter

It is the national policy that to the maximum extent possible the procedures utilized for implementing this chapter shall encourage the drastic minimization of paperwork and interagency decision procedures, and the best use of available manpower and funds, so as to prevent needless duplication and unnecessary delays at all levels of government.

(g) Authority of States over water

It is the policy of Congress that the authority of each State to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this chapter. It is the further policy of Congress that nothing in this chapter shall be construed to supersede or abrogate rights to quantities of water which have been established by any State. Federal agencies shall co-operate with State and local agencies to develop comprehensive solu-

tions to prevent, reduce and eliminate pollution in concert with programs for managing water resources.

(June 30, 1948, ch. 758, title I, § 101, as added Pub. L. 92–500, § 2, Oct. 18, 1972, 86 Stat. 816; amended Pub. L. 95–217, §§ 5(a), 26(b), Dec. 27, 1977, 91 Stat. 1567, 1575; Pub. L. 100–4, title III, § 316(b), Feb. 4, 1987, 101 Stat. 60.)

AMENDMENTS

1987—Subsec. (a)(7). Pub. L. 100–4 added par. (7).

1977—Subsec. (b). Pub. L. 95–217, § 26(b), inserted provisions expressing Congressional policy that the States manage the construction grant program under this chapter and implement the permit program under sections 1342 and 1344 of this title.

Subsec. (g). Pub. L. 95–217, § 5(a), added subsec. (g).

SHORT TITLE OF 2008 AMENDMENT

Pub. L. 110–365, § 1, Oct. 8, 2008, 122 Stat. 4021, provided that: ''This Act [amending sections 1268 and 1271a of this title] may be cited as the 'Great Lakes Legacy Reauthorization Act of 2008'.''

Pub. L. 110–288, § 1, July 29, 2008, 122 Stat. 2650, provided that: ''This Act [amending sections 1322, 1342, and 1362 of this title] may be cited as the 'Clean Boating Act of 2008'.''

SHORT TITLE OF 2002 AMENDMENT

Pub. L. 107–303, § 1(a), Nov. 27, 2002, 116 Stat. 2355, provided that: ''This Act [enacting section 1271a of this title, amending sections 1254, 1266, 1268, 1270, 1285, 1290, 1324, 1329, 1330, and 1375 of this title, enacting provisions set out as notes under this section, section 1254 of this title, and section 1113 of Title 31, Money and Finance, and repealing provisions set out as a note under section 50 of Title 20, Education] may be cited as the 'Great Lakes and Lake Champlain Act of 2002'.''

Pub. L. 107–303, title I, § 101, Nov. 27, 2002, 116 Stat. 2355, provided that: ''This title [enacting section 1271a of this title and amending section 1268 of this title] may be cited as the 'Great Lakes Legacy Act of 2002'.''

Pub. L. 107–303, title II, § 201, Nov. 27, 2002, 116 Stat. 2358, provided that: ''This title [amending section 1270 of this title] may be cited as the 'Daniel Patrick Moynihan Lake Champlain Basin Program Act of 2002'.''

SHORT TITLE OF 2000 AMENDMENTS

Pub. L. 106–457, title II, § 201, Nov. 7, 2000, 114 Stat. 1967, provided that: ''This title [amending section 1267 of this title and enacting provisions set out as a note under section 1267 of this title] may be cited as the 'Chesapeake Bay Restoration Act of 2000'.''

Pub. L. 106–457, title IV, § 401, Nov. 7, 2000, 114 Stat. 1973, provided that: ''This title [amending section 1269 of this title] may be cited as the 'Long Island Sound Restoration Act'.''

Pub. L. 106–457, title V, § 501, Nov. 7, 2000, 114 Stat. 1973, provided that: ''This title [enacting section 1273 of this title] may be cited as the 'Lake Pontchartrain Basin Restoration Act of 2000'.''

Pub. L. 106–457, title VI, § 601, Nov. 7, 2000, 114 Stat. 1975, provided that: ''This title [enacting section 1300 of this title] may be cited as the 'Alternative Water Sources Act of 2000'.''

Pub. L. 106–284, § 1, Oct. 10, 2000, 114 Stat. 870, provided that: ''This Act [enacting sections 1346 and 1375a of this title and amending sections 1254, 1313, 1314, 1362, and 1377 of this title] may be cited as the 'Beaches Environmental Assessment and Coastal Health Act of 2000'.''

SHORT TITLE OF 1994 AMENDMENT

Pub. L. 103–431, § 1, Oct. 31, 1994, 108 Stat. 4396, provided that: ''This Act [amending section 1311 of this title] may be cited as the 'Ocean Pollution Reduction Act'.''

SHORT TITLE OF 1990 AMENDMENT

Pub. L. 101–596, § 1, Nov. 16, 1990, 104 Stat. 3000, provided that: ''This Act [enacting sections 1269 and 1270 of this title, amending sections 1268, 1324, and 1416 of this title, and enacting provisions set out as notes under this section and section 1270 of this title] may be cited as the 'Great Lakes Critical Programs Act of 1990'.''

Pub. L. 101–596, title II, § 201, Nov. 16, 1990, 104 Stat. 3004, provided that: ''This part [probably means title, enacting section 1269 of this title and amending section 1416 of this title] may be cited as the 'Long Island Sound Improvement Act of 1990'.''

Pub. L. 101–596, title III, § 301, Nov. 16, 1990, 104 Stat. 3006, provided that: ''This title [enacting section 1270 of this title, amending section 1324 of this title, and enacting provisions set out as a note under section 1270 of this title] may be cited as the 'Lake Champlain Special Designation Act of 1990'.''

SHORT TITLE OF 1988 AMENDMENT

Pub. L. 100–653, title X, § 1001, Nov. 14, 1988, 102 Stat. 3835, provided that: ''This title [amending section 1330 of this title and enacting provisions set out as notes under section 1330 of this title] may be cited as the 'Massachusetts Bay Protection Act of 1988'.''

SHORT TITLE OF 1987 AMENDMENT

Section 1(a) of Pub. L. 100–4 provided that: ''This Act [enacting sections 1254a, 1267, 1268, 1281b, 1329, 1330, 1377, 1381 to 1387, and 1414a of this title, amending this section and sections 1254, 1256, 1262, 1281, 1282 to 1285, 1287, 1288, 1291, 1311 to 1313, 1314, 1317 to 1322, 1324, 1342, 1344, 1345, 1361, 1362, 1365, 1369, 1375, and 1376 of this title, and enacting provisions set out as notes under this section, sections 1284, 1311, 1317, 1319, 1330, 1342, 1345, 1362, 1375, and 1414a of this title, and section 1962d–20 of Title 42, The Public Health and Welfare] may be cited as the 'Water Quality Act of 1987'.''

SHORT TITLE OF 1981 AMENDMENT

Pub. L. 97–117, § 1, Dec. 29, 1981, 95 Stat. 1623, provided that: ''This Act [enacting sections 1298, 1299, and 1313a of this title, amending sections 1281 to 1285, 1287, 1291, 1292, 1296, 1311, and 1314 of this title, and enacting provisions set out as notes under sections 1311 and 1375 of this title] may be cited as the 'Municipal Wastewater Treatment Construction Grant Amendments of 1981'.''

SHORT TITLE OF 1977 AMENDMENT

Section 1 of Pub. L. 95–217 provided: ''That this Act [enacting sections 1281a, 1294 to 1296, and 1297 of this title, amending this section and sections 1252, 1254 to 1256, 1259, 1262, 1263, 1281, 1282 to 1288, 1291, 1292, 1311, 1314, 1315, 1317 to 1319, 1321 to 1324, 1328, 1341, 1342, 1344, 1345, 1362, 1364, 1375, and 1376 of this title, enacting provisions set out as notes under this section and sections 1284, 1286, 1314, 1321, 1342, 1344, and 1376 of this title, and amending provisions set out as a note under this section] may be cited as the 'Clean Water Act of 1977'.''

SHORT TITLE

Section 1 of Pub. L. 92–500 provided that: ''That this Act [enacting this chapter, amending section 24 of Title 12, Banks and Banking, sections 633 and 636 of Title 15, Commerce and Trade, and section 711 of former Title 31, Money and Finance, and enacting provisions set out as notes under this section and sections 1281 and 1361 of this title] may be cited as the 'Federal Water Pollution Control Act Amendments of 1972'.''

Section 519, formerly section 518, of Act June 30, 1948, ch. 758, title V, as added Oct. 18, 1972, Pub. L. 92–500, § 2, 86 Stat. 896, and amended Dec. 27, 1977, Pub. L. 95–217, § 2, 91 Stat. 1566, and renumbered § 519, Feb. 4, 1987, Pub. L. 100–4, title V, § 506, 101 Stat. 76, provided that: ''This Act [this chapter] may be cited as the 'Federal Water Pollution Control Act' (commonly referred to as the Clean Water Act).''

SAVINGS PROVISION

Section 4 of Pub. L. 92–500 provided that:

''(a) No suit, action, or other proceeding lawfully commenced by or against the Administrator or any

(A) Not to exceed $250,000,000 for making grants to municipalities and municipal entities under subsection (a)(2) of this section, in accordance with the criteria set forth in subsection (b) of this section.

(B) All remaining amounts for making grants to States under subsection (a)(1) of this section, in accordance with a formula to be established by the Administrator, after providing notice and an opportunity for public comment, that allocates to each State a proportional share of such amounts based on the total needs of the State for municipal combined sewer overflow controls and sanitary sewer overflow controls identified in the most recent survey conducted pursuant to section 1375(b)(1) of this title.

(h) Administrative expenses

Of the amounts appropriated to carry out this section for each fiscal year—

(1) the Administrator may retain an amount not to exceed 1 percent for the reasonable and necessary costs of administering this section; and

(2) the Administrator, or a State, may retain an amount not to exceed 4 percent of any grant made to a municipality or municipal entity under subsection (a) of this section, for the reasonable and necessary costs of administering the grant.

(i) Reports

Not later than December 31, 2003, and periodically thereafter, the Administrator shall transmit to Congress a report containing recommended funding levels for grants under this section. The recommended funding levels shall be sufficient to ensure the continued expeditious implementation of municipal combined sewer overflow and sanitary sewer overflow controls nationwide.

(June 30, 1948, ch. 758, title II, § 221, as added Pub. L. 106–554, § 1(a)(4) [div. B, title I, § 112(c)], Dec. 21, 2000, 114 Stat. 2763, 2763A–225.)

INFORMATION ON CSOS AND SSOS

Pub. L. 106–554, § 1(a)(4) [div. B, title I, § 112(d)], Dec. 21, 2000, 114 Stat. 2763, 2763A–227, provided that:

''(1) REPORT TO CONGRESS.—Not later than 3 years after the date of enactment of this Act [Dec. 21, 2000], the Administrator of the Environmental Protection Agency shall transmit to Congress a report summarizing—

''(A) the extent of the human health and environmental impacts caused by municipal combined sewer overflows and sanitary sewer overflows, including the location of discharges causing such impacts, the volume of pollutants discharged, and the constituents discharged;

''(B) the resources spent by municipalities to address these impacts; and

''(C) an evaluation of the technologies used by municipalities to address these impacts.

''(2) TECHNOLOGY CLEARINGHOUSE.—After transmitting a report under paragraph (1), the Administrator shall maintain a clearinghouse of cost-effective and efficient technologies for addressing human health and environmental impacts due to municipal combined sewer overflows and sanitary sewer overflows.''

SUBCHAPTER III—STANDARDS AND ENFORCEMENT

§ 1311. Effluent limitations

(a) Illegality of pollutant discharges except in compliance with law

Except as in compliance with this section and sections 1312, 1316, 1317, 1328, 1342, and 1344 of this title, the discharge of any pollutant by any person shall be unlawful.

(b) Timetable for achievement of objectives

In order to carry out the objective of this chapter there shall be achieved—

(1)(A) not later than July 1, 1977, effluent limitations for point sources, other than publicly owned treatment works, (i) which shall require the application of the best practicable control technology currently available as defined by the Administrator pursuant to section 1314(b) of this title, or (ii) in the case of a discharge into a publicly owned treatment works which meets the requirements of subparagraph (B) of this paragraph, which shall require compliance with any applicable pretreatment requirements and any requirements under section 1317 of this title; and

(B) for publicly owned treatment works in existence on July 1, 1977, or approved pursuant to section 1283 of this title prior to June 30, 1974 (for which construction must be completed within four years of approval), effluent limitations based upon secondary treatment as defined by the Administrator pursuant to section 1314(d)(1) of this title; or,

(C) not later than July 1, 1977, any more stringent limitation, including those necessary to meet water quality standards, treatment standards, or schedules of compliance, established pursuant to any State law or regulations (under authority preserved by section 1370 of this title) or any other Federal law or regulation, or required to implement any applicable water quality standard established pursuant to this chapter.

(2)(A) for pollutants identified in subparagraphs (C), (D), and (F) of this paragraph, effluent limitations for categories and classes of point sources, other than publicly owned treatment works, which (i) shall require application of the best available technology economically achievable for such category or class, which will result in reasonable further progress toward the national goal of eliminating the discharge of all pollutants, as determined in accordance with regulations issued by the Administrator pursuant to section 1314(b)(2) of this title, which such effluent limitations shall require the elimination of discharges of all pollutants if the Administrator finds, on the basis of information available to him (including information developed pursuant to section 1325 of this title), that such elimination is technologically and economically achievable for a category or class of point sources as determined in accordance with regulations issued by the Administrator pursuant to section 1314(b)(2) of this title, or (ii) in the case of the introduction of a pollutant into a publicly owned treatment works which meets the requirements of subparagraph

quality requirements such Federal agency may, after public hearing, suspend such license or permit. If such license or permit is suspended, it shall remain suspended until notification is received from the certifying State, agency, or Administrator, as the case may be, that there is reasonable assurance that such facility or activity will not violate the applicable provisions of section 1311, 1312, 1313, 1316, or 1317 of this title.

(5) Any Federal license or permit with respect to which a certification has been obtained under paragraph (1) of this subsection may be suspended or revoked by the Federal agency issuing such license or permit upon the entering of a judgment under this chapter that such facility or activity has been operated in violation of the applicable provisions of section 1311, 1312, 1313, 1316, or 1317 of this title.

(6) Except with respect to a permit issued under section 1342 of this title, in any case where actual construction of a facility has been lawfully commenced prior to April 3, 1970, no certification shall be required under this subsection for a license or permit issued after April 3, 1970, to operate such facility, except that any such license or permit issued without certification shall terminate April 3, 1973, unless prior to such termination date the person having such license or permit submits to the Federal agency which issued such license or permit a certification and otherwise meets the requirements of this section.

(b) Compliance with other provisions of law setting applicable water quality requirements

Nothing in this section shall be construed to limit the authority of any department or agency pursuant to any other provision of law to require compliance with any applicable water quality requirements. The Administrator shall, upon the request of any Federal department or agency, or State or interstate agency, or applicant, provide, for the purpose of this section, any relevant information on applicable effluent limitations, or other limitations, standards, regulations, or requirements, or water quality criteria, and shall, when requested by any such department or agency or State or interstate agency, or applicant, comment on any methods to comply with such limitations, standards, regulations, requirements, or criteria.

(c) Authority of Secretary of the Army to permit use of spoil disposal areas by Federal licensees or permittees

In order to implement the provisions of this section, the Secretary of the Army, acting through the Chief of Engineers, is authorized, if he deems it to be in the public interest, to permit the use of spoil disposal areas under his jurisdiction by Federal licensees or permittees, and to make an appropriate charge for such use. Moneys received from such licensees or permittees shall be deposited in the Treasury as miscellaneous receipts.

(d) Limitations and monitoring requirements of certification

Any certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable effluent limitations and other limitations, under section 1311 or 1312 of this title, standard of performance under section 1316 of this title, or prohibition, effluent standard, or pretreatment standard under section 1317 of this title, and with any other appropriate requirement of State law set forth in such certification, and shall become a condition on any Federal license or permit subject to the provisions of this section.

(June 30, 1948, ch. 758, title IV, § 401, as added Pub. L. 92–500, § 2, Oct. 18, 1972, 86 Stat. 877; amended Pub. L. 95–217, §§ 61(b), 64, Dec. 27, 1977, 91 Stat. 1598, 1599.)

AMENDMENTS

1977—Subsec. (a). Pub. L. 95–217 inserted reference to section 1313 of this title in pars. (1), (3), (4), and (5), struck out par. (6) which provided that no Federal agency be deemed an applicant for purposes of this subsection, and redesignated par. (7) as (6).

§ 1342. National pollutant discharge elimination system

(a) Permits for discharge of pollutants

(1) Except as provided in sections 1328 and 1344 of this title, the Administrator may, after opportunity for public hearing issue a permit for the discharge of any pollutant, or combination of pollutants, notwithstanding section 1311(a) of this title, upon condition that such discharge will meet either (A) all applicable requirements under sections 1311, 1312, 1316, 1317, 1318, and 1343 of this title, or (B) prior to the taking of necessary implementing actions relating to all such requirements, such conditions as the Administrator determines are necessary to carry out the provisions of this chapter.

(2) The Administrator shall prescribe conditions for such permits to assure compliance with the requirements of paragraph (1) of this subsection, including conditions on data and information collection, reporting, and such other requirements as he deems appropriate.

(3) The permit program of the Administrator under paragraph (1) of this subsection, and permits issued thereunder, shall be subject to the same terms, conditions, and requirements as apply to a State permit program and permits issued thereunder under subsection (b) of this section.

(4) All permits for discharges into the navigable waters issued pursuant to section 407 of this title shall be deemed to be permits issued under this subchapter, and permits issued under this subchapter shall be deemed to be permits issued under section 407 of this title, and shall continue in force and effect for their term unless revoked, modified, or suspended in accordance with the provisions of this chapter.

(5) No permit for a discharge into the navigable waters shall be issued under section 407 of this title after October 18, 1972. Each application for a permit under section 407 of this title, pending on October 18, 1972, shall be deemed to be an application for a permit under this section. The Administrator shall authorize a State, which he determines has the capability of administering a permit program which will carry out the objec-

tives of this chapter to issue permits for discharges into the navigable waters within the jurisdiction of such State. The Administrator may exercise the authority granted him by the preceding sentence only during the period which begins on October 18, 1972, and ends either on the ninetieth day after the date of the first promulgation of guidelines required by section 1314(i)(2) of this title, or the date of approval by the Administrator of a permit program for such State under subsection (b) of this section, whichever date first occurs, and no such authorization to a State shall extend beyond the last day of such period. Each such permit shall be subject to such conditions as the Administrator determines are necessary to carry out the provisions of this chapter. No such permit shall issue if the Administrator objects to such issuance.

(b) State permit programs

At any time after the promulgation of the guidelines required by subsection (i)(2) of section 1314 of this title, the Governor of each State desiring to administer its own permit program for discharges into navigable waters within its jurisdiction may submit to the Administrator a full and complete description of the program it proposes to establish and administer under State law or under an interstate compact. In addition, such State shall submit a statement from the attorney general (or the attorney for those State water pollution control agencies which have independent legal counsel), or from the chief legal officer in the case of an interstate agency, that the laws of such State, or the interstate compact, as the case may be, provide adequate authority to carry out the described program. The Administrator shall approve each submitted program unless he determines that adequate authority does not exist:

(1) To issue permits which—

(A) apply, and insure compliance with, any applicable requirements of sections 1311, 1312, 1316, 1317, and 1343 of this title;

(B) are for fixed terms not exceeding five years; and

(C) can be terminated or modified for cause including, but not limited to, the following:

(i) violation of any condition of the permit;

(ii) obtaining a permit by misrepresentation, or failure to disclose fully all relevant facts;

(iii) change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

(D) control the disposal of pollutants into wells;

(2)(A) To issue permits which apply, and insure compliance with, all applicable requirements of section 1318 of this title; or

(B) To inspect, monitor, enter, and require reports to at least the same extent as required in section 1318 of this title;

(3) To insure that the public, and any other State the waters of which may be affected, receive notice of each application for a permit and to provide an opportunity for public hearing before a ruling on each such application;

(4) To insure that the Administrator receives notice of each application (including a copy thereof) for a permit;

(5) To insure that any State (other than the permitting State), whose waters may be affected by the issuance of a permit may submit written recommendations to the permitting State (and the Administrator) with respect to any permit application and, if any part of such written recommendations are not accepted by the permitting State, that the permitting State will notify such affected State (and the Administrator) in writing of its failure to so accept such recommendations together with its reasons for so doing;

(6) To insure that no permit will be issued if, in the judgment of the Secretary of the Army acting through the Chief of Engineers, after consultation with the Secretary of the department in which the Coast Guard is operating, anchorage and navigation of any of the navigable waters would be substantially impaired thereby;

(7) To abate violations of the permit or the permit program, including civil and criminal penalties and other ways and means of enforcement;

(8) To insure that any permit for a discharge from a publicly owned treatment works includes conditions to require the identification in terms of character and volume of pollutants of any significant source introducing pollutants subject to pretreatment standards under section 1317(b) of this title into such works and a program to assure compliance with such pretreatment standards by each such source, in addition to adequate notice to the permitting agency of (A) new introductions into such works of pollutants from any source which would be a new source as defined in section 1316 of this title if such source were discharging pollutants, (B) new introductions of pollutants into such works from a source which would be subject to section 1311 of this title if it were discharging such pollutants, or (C) a substantial change in volume or character of pollutants being introduced into such works by a source introducing pollutants into such works at the time of issuance of the permit. Such notice shall include information on the quality and quantity of effluent to be introduced into such treatment works and any anticipated impact of such change in the quantity or quality of effluent to be discharged from such publicly owned treatment works; and

(9) To insure that any industrial user of any publicly owned treatment works will comply with sections 1284(b), 1317, and 1318 of this title.

(c) Suspension of Federal program upon submission of State program; withdrawal of approval of State program; return of State program to Administrator

(1) Not later than ninety days after the date on which a State has submitted a program (or revision thereof) pursuant to subsection (b) of this section, the Administrator shall suspend the issuance of permits under subsection (a) of this section as to those discharges subject to such program unless he determines that the State permit program does not meet the requirements of subsection (b) of this section or does not conform to the guidelines issued under section 1314(i)(2) of this title. If the Administrator so determines, he shall notify the State of any revisions or modifications necessary to conform to such requirements or guidelines.

(2) Any State permit program under this section shall at all times be in accordance with this section and guidelines promulgated pursuant to section 1314(i)(2) of this title.

(3) Whenever the Administrator determines after public hearing that a State is not administering a program approved under this section in accordance with requirements of this section, he shall so notify the State and, if appropriate corrective action is not taken within a reasonable time, not to exceed ninety days, the Administrator shall withdraw approval of such program. The Administrator shall not withdraw approval of any such program unless he shall first have notified the State, and made public, in writing, the reasons for such withdrawal.

(4) LIMITATIONS ON PARTIAL PERMIT PROGRAM RETURNS AND WITHDRAWALS.—A State may return to the Administrator administration, and the Administrator may withdraw under paragraph (3) of this subsection approval, of—

(A) a State partial permit program approved under subsection (n)(3) of this section only if the entire permit program being administered by the State department or agency at the time is returned or withdrawn; and

(B) a State partial permit program approved under subsection (n)(4) of this section only if an entire phased component of the permit program being administered by the State at the time is returned or withdrawn.

(d) Notification of Administrator

(1) Each State shall transmit to the Administrator a copy of each permit application received by such State and provide notice to the Administrator of every action related to the consideration of such permit application, including each permit proposed to be issued by such State.

(2) No permit shall issue (A) if the Administrator within ninety days of the date of his notification under subsection (b)(5) of this section objects in writing to the issuance of such permit, or (B) if the Administrator within ninety days of the date of transmittal of the proposed permit by the State objects in writing to the issuance of such permit as being outside the guidelines and requirements of this chapter. Whenever the Administrator objects to the issuance of a permit under this paragraph such written objection shall contain a statement of the reasons for such objection and the effluent limitations and conditions which such permit would include if it were issued by the Administrator.

(3) The Administrator may, as to any permit application, waive paragraph (2) of this subsection.

(4) In any case where, after December 27, 1977, the Administrator, pursuant to paragraph (2) of this subsection, objects to the issuance of a permit, on request of the State, a public hearing shall be held by the Administrator on such objection. If the State does not resubmit such permit revised to meet such objection within 30 days after completion of the hearing, or, if no hearing is requested within 90 days after the date of such objection, the Administrator may issue the permit pursuant to subsection (a) of this section for such source in accordance with the guidelines and requirements of this chapter.

(e) Waiver of notification requirement

In accordance with guidelines promulgated pursuant to subsection (i)(2) of section 1314 of this title, the Administrator is authorized to waive the requirements of subsection (d) of this section at the time he approves a program pursuant to subsection (b) of this section for any category (including any class, type, or size within such category) of point sources within the State submitting such program.

(f) Point source categories

The Administrator shall promulgate regulations establishing categories of point sources which he determines shall not be subject to the requirements of subsection (d) of this section in any State with a program approved pursuant to subsection (b) of this section. The Administrator may distinguish among classes, types, and sizes within any category of point sources.

(g) Other regulations for safe transportation, handling, carriage, storage, and stowage of pollutants

Any permit issued under this section for the discharge of pollutants into the navigable waters from a vessel or other floating craft shall be subject to any applicable regulations promulgated by the Secretary of the department in which the Coast Guard is operating, establishing specifications for safe transportation, handling, carriage, storage, and stowage of pollutants.

(h) Violation of permit conditions; restriction or prohibition upon introduction of pollutant by source not previously utilizing treatment works

In the event any condition of a permit for discharges from a treatment works (as defined in section 1292 of this title) which is publicly owned is violated, a State with a program approved under subsection (b) of this section or the Administrator, where no State program is approved or where the Administrator determines pursuant to section 1319(a) of this title that a State with an approved program has not commenced appropriate enforcement action with respect to such permit, may proceed in a court of competent jurisdiction to restrict or prohibit the introduction of any pollutant into such treatment works by a source not utilizing such treatment works prior to the finding that such condition was violated.

(i) Federal enforcement not limited

Nothing in this section shall be construed to limit the authority of the Administrator to take action pursuant to section 1319 of this title.

(j) Public information

A copy of each permit application and each permit issued under this section shall be available to the public. Such permit application or permit, or portion thereof, shall further be available on request for the purpose of reproduction.

(k) Compliance with permits

Compliance with a permit issued pursuant to this section shall be deemed compliance, for purposes of sections 1319 and 1365 of this title, with sections 1311, 1312, 1316, 1317, and 1343 of this title, except any standard imposed under section

1317 of this title for a toxic pollutant injurious to human health. Until December 31, 1974, in any case where a permit for discharge has been applied for pursuant to this section, but final administrative disposition of such application has not been made, such discharge shall not be a violation of (1) section 1311, 1316, or 1342 of this title, or (2) section 407 of this title, unless the Administrator or other plaintiff proves that final administrative disposition of such application has not been made because of the failure of the applicant to furnish information reasonably required or requested in order to process the application. For the 180-day period beginning on October 18, 1972, in the case of any point source discharging any pollutant or combination of pollutants immediately prior to such date which source is not subject to section 407 of this title, the discharge by such source shall not be a violation of this chapter if such a source applies for a permit for discharge pursuant to this section within such 180-day period.

(*l*) Limitation on permit requirement

(1) Agricultural return flows

The Administrator shall not require a permit under this section for discharges composed entirely of return flows from irrigated agriculture, nor shall the Administrator directly or indirectly, require any State to require such a permit.

(2) Stormwater runoff from oil, gas, and mining operations

The Administrator shall not require a permit under this section, nor shall the Administrator directly or indirectly require any State to require a permit, for discharges of stormwater runoff from mining operations or oil and gas exploration, production, processing, or treatment operations or transmission facilities, composed entirely of flows which are from conveyances or systems of conveyances (including but not limited to pipes, conduits, ditches, and channels) used for collecting and conveying precipitation runoff and which are not contaminated by contact with, or do not come into contact with, any overburden, raw material, intermediate products, finished product, byproduct, or waste products located on the site of such operations.

(m) Additional pretreatment of conventional pollutants not required

To the extent a treatment works (as defined in section 1292 of this title) which is publicly owned is not meeting the requirements of a permit issued under this section for such treatment works as a result of inadequate design or operation of such treatment works, the Administrator, in issuing a permit under this section, shall not require pretreatment by a person introducing conventional pollutants identified pursuant to section 1314(a)(4) of this title into such treatment works other than pretreatment required to assure compliance with pretreatment standards under subsection (b)(8) of this section and section 1317(b)(1) of this title. Nothing in this subsection shall affect the Administrator's authority under sections 1317 and 1319 of this title, affect State and local authority under sections 1317(b)(4) and 1370 of this title, relieve such treatment works of its obligations to meet requirements established under this chapter, or otherwise preclude such works from pursuing whatever feasible options are available to meet its responsibility to comply with its permit under this section.

(n) Partial permit program

(1) State submission

The Governor of a State may submit under subsection (b) of this section a permit program for a portion of the discharges into the navigable waters in such State.

(2) Minimum coverage

A partial permit program under this subsection shall cover, at a minimum, administration of a major category of the discharges into the navigable waters of the State or a major component of the permit program required by subsection (b) of this section.

(3) Approval of major category partial permit programs

The Administrator may approve a partial permit program covering administration of a major category of discharges under this subsection if—

(A) such program represents a complete permit program and covers all of the discharges under the jurisdiction of a department or agency of the State; and

(B) the Administrator determines that the partial program represents a significant and identifiable part of the State program required by subsection (b) of this section.

(4) Approval of major component partial permit programs

The Administrator may approve under this subsection a partial and phased permit program covering administration of a major component (including discharge categories) of a State permit program required by subsection (b) of this section if—

(A) the Administrator determines that the partial program represents a significant and identifiable part of the State program required by subsection (b) of this section; and

(B) the State submits, and the Administrator approves, a plan for the State to assume administration by phases of the remainder of the State program required by subsection (b) of this section by a specified date not more than 5 years after submission of the partial program under this subsection and agrees to make all reasonable efforts to assume such administration by such date.

(*o*) Anti-backsliding

(1) General prohibition

In the case of effluent limitations established on the basis of subsection (a)(1)(B) of this section, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 1314(b) of this title subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit. In the case of effluent limitations established on the basis of section 1311(b)(1)(C)

or section 1313(d) or (e) of this title, a permit may not be renewed, reissued, or modified to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit except in compliance with section 1313(d)(4) of this title.

(2) Exceptions

A permit with respect to which paragraph (1) applies may be renewed, reissued, or modified to contain a less stringent effluent limitation applicable to a pollutant if—

(A) material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of a less stringent effluent limitation;

(B)(i) information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance; or

(ii) the Administrator determines that technical mistakes or mistaken interpretations of law were made in issuing the permit under subsection (a)(1)(B) of this section;

(C) a less stringent effluent limitation is necessary because of events over which the permittee has no control and for which there is no reasonably available remedy;

(D) the permittee has received a permit modification under section 1311(c), 1311(g), 1311(h), 1311(i), 1311(k), 1311(n), or 1326(a) of this title; or

(E) the permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations, in which case the limitations in the reviewed, reissued, or modified permit may reflect the level of pollutant control actually achieved (but shall not be less stringent than required by effluent guidelines in effect at the time of permit renewal, reissuance, or modification).

Subparagraph (B) shall not apply to any revised waste load allocations or any alternative grounds for translating water quality standards into effluent limitations, except where the cumulative effect of such revised allocations results in a decrease in the amount of pollutants discharged into the concerned waters, and such revised allocations are not the result of a discharger eliminating or substantially reducing its discharge of pollutants due to complying with the requirements of this chapter or for reasons otherwise unrelated to water quality.

(3) Limitations

In no event may a permit with respect to which paragraph (1) applies be renewed, reissued, or modified to contain an effluent limitation which is less stringent than required by effluent guidelines in effect at the time the permit is renewed, reissued, or modified. In no event may such a permit to discharge into waters be renewed, reissued, or modified to contain a less stringent effluent limitation if the implementation of such limitation would result in a violation of a water quality standard under section 1313 of this title applicable to such waters.

(p) Municipal and industrial stormwater discharges

(1) General rule

Prior to October 1, 1994, the Administrator or the State (in the case of a permit program approved under this section) shall not require a permit under this section for discharges composed entirely of stormwater.

(2) Exceptions

Paragraph (1) shall not apply with respect to the following stormwater discharges:

(A) A discharge with respect to which a permit has been issued under this section before February 4, 1987.

(B) A discharge associated with industrial activity.

(C) A discharge from a municipal separate storm sewer system serving a population of 250,000 or more.

(D) A discharge from a municipal separate storm sewer system serving a population of 100,000 or more but less than 250,000.

(E) A discharge for which the Administrator or the State, as the case may be, determines that the stormwater discharge contributes to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States.

(3) Permit requirements

(A) Industrial discharges

Permits for discharges associated with industrial activity shall meet all applicable provisions of this section and section 1311 of this title.

(B) Municipal discharge

Permits for discharges from municipal storm sewers—

(i) may be issued on a system- or jurisdiction-wide basis;

(ii) shall include a requirement to effectively prohibit non-stormwater discharges into the storm sewers; and

(iii) shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants.

(4) Permit application requirements

(A) Industrial and large municipal discharges

Not later than 2 years after February 4, 1987, the Administrator shall establish regulations setting forth the permit application requirements for stormwater discharges described in paragraphs (2)(B) and (2)(C). Applications for permits for such discharges shall be filed no later than 3 years after February 4, 1987. Not later than 4 years after February 4, 1987, the Administrator or the State, as

the case may be, shall issue or deny each such permit. Any such permit shall provide for compliance as expeditiously as practicable, but in no event later than 3 years after the date of issuance of such permit.

(B) Other municipal discharges

Not later than 4 years after February 4, 1987, the Administrator shall establish regulations setting forth the permit application requirements for stormwater discharges described in paragraph (2)(D). Applications for permits for such discharges shall be filed no later than 5 years after February 4, 1987. Not later than 6 years after February 4, 1987, the Administrator or the State, as the case may be, shall issue or deny each such permit. Any such permit shall provide for compliance as expeditiously as practicable, but in no event later than 3 years after the date of issuance of such permit.

(5) Studies

The Administrator, in consultation with the States, shall conduct a study for the purposes of—

(A) identifying those stormwater discharges or classes of stormwater discharges for which permits are not required pursuant to paragraphs (1) and (2) of this subsection;

(B) determining, to the maximum extent practicable, the nature and extent of pollutants in such discharges; and

(C) establishing procedures and methods to control stormwater discharges to the extent necessary to mitigate impacts on water quality.

Not later than October 1, 1988, the Administrator shall submit to Congress a report on the results of the study described in subparagraphs (A) and (B). Not later than October 1, 1989, the Administrator shall submit to Congress a report on the results of the study described in subparagraph (C).

(6) Regulations

Not later than October 1, 1993, the Administrator, in consultation with State and local officials, shall issue regulations (based on the results of the studies conducted under paragraph (5)) which designate stormwater discharges, other than those discharges described in paragraph (2), to be regulated to protect water quality and shall establish a comprehensive program to regulate such designated sources. The program shall, at a minimum, (A) establish priorities, (B) establish requirements for State stormwater management programs, and (C) establish expeditious deadlines. The program may include performance standards, guidelines, guidance, and management practices and treatment requirements, as appropriate.

(q) Combined sewer overflows

(1) Requirement for permits, orders, and decrees

Each permit, order, or decree issued pursuant to this chapter after December 21, 2000, for a discharge from a municipal combined storm and sanitary sewer shall conform to the Combined Sewer Overflow Control Policy signed by the Administrator on April 11, 1994 (in this subsection referred to as the ''CSO control policy'').

(2) Water quality and designated use review guidance

Not later than July 31, 2001, and after providing notice and opportunity for public comment, the Administrator shall issue guidance to facilitate the conduct of water quality and designated use reviews for municipal combined sewer overflow receiving waters.

(3) Report

Not later than September 1, 2001, the Administrator shall transmit to Congress a report on the progress made by the Environmental Protection Agency, States, and municipalities in implementing and enforcing the CSO control policy.

(r) Discharges incidental to the normal operation of recreational vessels

No permit shall be required under this chapter by the Administrator (or a State, in the case of a permit program approved under subsection (b)) for the discharge of any graywater, bilge water, cooling water, weather deck runoff, oil water separator effluent, or effluent from properly functioning marine engines, or any other discharge that is incidental to the normal operation of a vessel, if the discharge is from a recreational vessel.

(June 30, 1948, ch. 758, title IV, § 402, as added Pub. L. 92–500, § 2, Oct. 18, 1972, 86 Stat. 880; amended Pub. L. 95–217, §§ 33(c), 50, 54(c)(1), 65, 66, Dec. 27, 1977, 91 Stat. 1577, 1588, 1591, 1599, 1600; Pub. L. 100–4, title IV, §§ 401–404(a), 404(c), formerly 404(d), 405, Feb. 4, 1987, 101 Stat. 65–67, 69, renumbered § 404(c), Pub. L. 104–66, title II, § 2021(e)(2), Dec. 21, 1995, 109 Stat. 727; Pub. L. 102–580, title III, § 364, Oct. 31, 1992, 106 Stat. 4862; Pub. L. 106–554, § 1(a)(4) [div. B, title I, § 112(a)], Dec. 21, 2000, 114 Stat. 2763, 2763A–224; Pub. L. 110–288, § 2, July 29, 2008, 122 Stat. 2650.)

AMENDMENTS

2008—Subsec. (r). Pub. L. 110–288 added subsec. (r).

2000—Subsec. (q). Pub. L. 106–554 added subsec. (q).

1992—Subsec. (p)(1), (6). Pub. L. 102–580 substituted ''October 1, 1994'' for ''October 1, 1992'' in par. (1) and ''October 1, 1993'' for ''October 1, 1992'' in par. (6).

1987—Subsec. (a)(1). Pub. L. 100–4, § 404(c), inserted cl. (A) and (B) designations.

Subsec. (c)(1). Pub. L. 100–4, § 403(b)(2), substituted ''as to those discharges'' for ''as to those navigable waters''.

Subsec. (c)(4). Pub. L. 100–4, § 403(b)(1), added par. (4).

Subsec. (*l*). Pub. L. 100–4, § 401, inserted ''Limitation on permit requirement'' as subsec. heading designated existing provisions as par. (1) and inserted par. heading, added par. (2), and aligned pars. (1) and (2).

Subsecs. (m) to (p). Pub. L. 100–4, §§ 402, 403(a), 404(a), 405, added subsecs. (m) to (p).

1977—Subsec. (a)(5). Pub. L. 95–217, § 50, substituted ''section 1314(i)(2)'' for ''section 1314(h)(2)''.

Subsec. (b). Pub. L. 95–217, § 50, substituted in provisions preceding par. (1) ''subsection (i)(2) of section 1314'' for ''subsection (h)(2) of section 1314''.

Subsec. (b)(8). Pub. L. 95–217, § 54(c)(1), inserted reference to identification in terms of character and volume of pollutants of any significant source introducing pollutants subject to pretreatment standards under section 1317(b) of this title into treatment works and programs to assure compliance with pretreatment standards by each source.

(3) AWARD OF FEES.—In any judicial proceeding under this subsection, the court may award costs of litigation (including reasonable attorney and expert witness fees) to any prevailing or substantially prevailing party whenever it determines that such award is appropriate.

(c) Additional evidence

In any judicial proceeding brought under subsection (b) of this section in which review is sought of a determination under this chapter required to be made on the record after notice and opportunity for hearing, if any party applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court that such additional evidence is material and that there were reasonable grounds for the failure to adduce such evidence in the proceeding before the Administrator, the court may order such additional evidence (and evidence in rebuttal thereof) to be taken before the Administrator, in such manner and upon such terms and conditions as the court may deem proper. The Administrator may modify his findings as to the facts, or make new findings, by reason of the additional evidence so taken and he shall file such modified or new findings, and his recommendation, if any, for the modification or setting aside of his original determination, with the return of such additional evidence.

(June 30, 1948, ch. 758, title V, § 509, as added Pub. L. 92–500, § 2, Oct. 18, 1972, 86 Stat. 891; amended Pub. L. 93–207, § 1(6), Dec. 28, 1973, 87 Stat. 906; Pub. L. 100–4, title III, § 308(b), title IV, § 406(d)(3), title V, § 505(a), (b), Feb. 4, 1987, 101 Stat. 39, 73, 75; Pub. L. 100–236, § 2, Jan. 8, 1988, 101 Stat. 1732.)

AMENDMENTS

1988—Subsec. (b)(3), (4). Pub. L. 100–236 redesignated par. (4) as (3) and struck out former par. (3) relating to venue, which provided for selection procedure in subpar. (A), administrative provisions in subpar. (B), and transfers in subpar. (C).

1987—Subsec. (b)(1). Pub. L. 100–4, §§ 308(b), 406(d)(3), 505(a), substituted ''transacts business which is directly affected by such action'' for ''transacts such business'', ''120'' for ''ninety'', and ''120th'' for ''ninetieth'', substituted ''1316, or 1345 of this title'' for ''or 1316 of this title'' in cl. (E), and added cl. (G).

Subsec. (b)(3), (4). Pub. L. 100–4, § 505(b), added pars. (3) and (4).

1973—Subsec. (b)(1)(C). Pub. L. 93–207 substituted ''pretreatment'' for ''treatment''.

EFFECTIVE DATE OF 1988 AMENDMENT

Amendment by Pub. L. 100–236 effective 180 days after Jan. 8, 1988, see section 3 of Pub. L. 100–236, set out as a note under section 2112 of Title 28, Judiciary and Judicial Procedure.

§ 1370. State authority

Except as expressly provided in this chapter, nothing in this chapter shall (1) preclude or deny the right of any State or political subdivision thereof or interstate agency to adopt or enforce (A) any standard or limitation respecting discharges of pollutants, or (B) any requirement respecting control or abatement of pollution; except that if an effluent limitation, or other limitation, effluent standard, prohibition, pretreatment standard, or standard of performance is in effect under this chapter, such State or political subdivision or interstate agency may not adopt or enforce any effluent limitation, or other limitation, effluent standard, prohibition, pretreatment standard, or standard of performance which is less stringent than the effluent limitation, or other limitation, effluent standard, prohibition, pretreatment standard, or standard of performance under this chapter; or (2) be construed as impairing or in any manner affecting any right or jurisdiction of the States with respect to the waters (including boundary waters) of such States.

(June 30, 1948, ch. 758, title V, § 510, as added Pub. L. 92–500, § 2, Oct. 18, 1972, 86 Stat. 893.)

§ 1371. Authority under other laws and regulations

(a) Impairment of authority or functions of officials and agencies; treaty provisions

This chapter shall not be construed as (1) limiting the authority or functions of any officer or agency of the United States under any other law or regulation not inconsistent with this chapter; (2) affecting or impairing the authority of the Secretary of the Army (A) to maintain navigation or (B) under the Act of March 3, 1899, (30 Stat. 1112); except that any permit issued under section 1344 of this title shall be conclusive as to the effect on water quality of any discharge resulting from any activity subject to section 403 of this title, or (3) affecting or impairing the provisions of any treaty of the United States.

(b) Discharges of pollutants into navigable waters

Discharges of pollutants into the navigable waters subject to the Rivers and Harbors Act of 1910 (36 Stat. 593; 33 U.S.C. 421) and the Supervisory Harbors Act of 1888 (25 Stat. 209; 33 U.S.C. 441–451b) shall be regulated pursuant to this chapter, and not subject to such Act of 1910 and the Act of 1888 except as to effect on navigation and anchorage.

(c) Action of the Administrator deemed major Federal action; construction of the National Environmental Policy Act of 1969

(1) Except for the provision of Federal financial assistance for the purpose of assisting the construction of publicly owned treatment works as authorized by section 1281 of this title, and the issuance of a permit under section 1342 of this title for the discharge of any pollutant by a new source as defined in section 1316 of this title, no action of the Administrator taken pursuant to this chapter shall be deemed a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969 (83 Stat. 852) [42 U.S.C. 4321 et seq.]; and

(2) Nothing in the National Environmental Policy Act of 1969 (83 Stat. 852) shall be deemed to—

(A) authorize any Federal agency authorized to license or permit the conduct of any activity which may result in the discharge of a pollutant into the navigable waters to review any effluent limitation or other requirement established pursuant to this chapter or the adequacy of any certification under section 1341 of this title; or

SUBCHAPTER D—WATER PROGRAMS (CONTINUED)

PART 136—GUIDELINES ESTABLISHING TEST PROCEDURES FOR THE ANALYSIS OF POLLUTANTS

Sec.

AUTHORITY: Secs. 301, 304(h), 307 and 501(a), Pub. L. 95–217, 91 Stat. 1566, et seq. (33 U.S.C. 1251, et seq.) (the Federal Water Pollution Control Act Amendments of 1972 as amended by the Clean Water Act of 1977).

§ 136.1 Applicability.

The procedures prescribed herein shall, except as noted in § 136.5, be used to perform the measurements indicated whenever the waste constituent specified is required to be measured for:

(a) An application submitted to the Administrator, or to a State having an approved NPDES program for a permit under section 402 of the Clean Water Act of 1977, as amended (CWA), and/or to reports required to be submitted under NPDES permits or other requests for quantitative or qualitative effluent data under parts 122 to 125 of title 40, and,

(b) Reports required to be submitted by discharges under the NPDES established by parts 124 and 125 of this chapter, and,

(c) Certifications issued by States pursuant to section 401 of the CWA, as amended.

[38 FR 28758, Oct. 16, 1973, as amended at 49 FR 43250, Oct. 26, 1984]

§ 136.2 Definitions.

As used in this part, the term:

(a) *Act* means the Clean Water Act of 1977, Pub. L. 95–217, 91 Stat. 1566, et seq. (33 U.S.C. 1251 et seq.) (The Federal Water Pollution Control Act Amendments of 1972 as amended by the Clean Water Act of 1977).

(b) *Administrator* means the Administrator of the U.S. Environmental Protection Agency.

(c) *Regional Administrator* means one of the EPA Regional Administrators.

(d) *Director* means the Director of the State Agency authorized to carry out an approved National Pollutant Discharge Elimination System Program under section 402 of the Act.

(e) *National Pollutant Discharge Elimination System (NPDES)* means the national system for the issuance of permits under section 402 of the Act and includes any State or interstate program which has been approved by the Administrator, in whole or in part, pursuant to section 402 of the Act.

(f) *Detection limit* means the minimum concentration of an analyte (substance) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero as determined by the procedure set forth at appendix B of this part.

[38 FR 28758, Oct. 16, 1973, as amended at 49 FR 43250, Oct. 26, 1984]

§ 136.3 Identification of test procedures.

(a) Parameters or pollutants, for which methods are approved, are listed together with test procedure descriptions and references in Tables IA, IB, IC, ID, IE, and IF. The full text of the referenced test procedures are incorporated by reference into Tables IA, IB, IC, ID, IE, and IF. The incorporation by reference of these documents, as specified in paragraph (b) of this section, was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the documents may be obtained from the sources listed in paragraph (b) of

this section. Information regarding obtaining these documents can be obtained from the EPA Office of Water Statistics and Analytical Support Branch at 202–566–1000. Documents may be inspected at EPA's Water Docket, EPA West, 1301 Constitution Avenue, NW., Room B135, Washington, DC (Telephone: 202-566–2426); or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC. These test procedures are incorporated as they exist on the day of approval and a notice of anys change in these test procedures will be published in the FEDERAL REGISTER. The discharge parameter values for which reports are required must be determined by one of the standard analytical test procedures incorporated by reference and described in Tables IA, IB, IC, IE, and IF, or by any alternate test procedure which has been approved by the Administrator under the provisions of paragraph (d) of this section and §§136.4 and 136.5. Under certain circumstances (paragraph (b) or (c) of this section or 40 CFR 401.13) other test procedures may be more advantageous when such other test procedures have been previously approved by the Regional Administrator of the Region in which the discharge will occur, and providing the Director of the State in which such discharge will occur does not object to the use of such alternate test procedure.

TABLE IA—LIST OF APPROVED BIOLOGICAL METHODS

Parameter and units	Method [1]	EPA	*Standard Methods* 18th, 19th, 20th ed.	ASTM	USGS
Bacteria:					
1. Coiform (fecal), number per 100 mL	Most Probable Number (MPN), 5 tube	p. 132 [3]	9221C E [4]		
	3 dilution, or Membrane filter (MF) [2] single step	p. 124 [3]	9222D [4]		B–0050–85 [5]
2. Coliform (fecal) in presence of choline, number per 100 mL.	MPN, 5 tube, 3 dilution, or	p. 132 [3]	9221C E [4]		
	MF, single step [6]	p. 124 [3]	9221D [4]		
3. Coliform (total), number per 100 mL	MPN, 5 tube, 3 dilution, or	p. 114 [3]	9221B [4]		
	MF [2] single step or two step	p. 108 [3]	9222B [4]		B–0025–85 [5]
4. Coliform (total), in presence of clorine, number per 100 mL.	MPN, 5 tube, 3 dilution, or	p. 114 [3]	9221B [4]		
	MF [2] with enrichment	p. 111 [3]	9222 (B+B.5c) [4]		
5. Fecal streptococci, number per 100 mL	MPN, 5 tube, 3 dilution	p. 139 [3]	9230B [4]		
	MF [2] or	p. 136 [3]	9230C [4]		B–0055–85 [5]
	Plate count	p. 143 [3]			
Aquatic Toxicity:					
6. Toxicity, acute, fresh water organisms, LC50, percent effluent.	Ceriodaphnia dubia acute	[7] 2002.0			
	Daphnia pulex and Daphnia magna acute	[7] 2021.0			
	Fathead minnow, Pimephales promelas, and Bannerfin shiner, Cyprinella leedsi, acute.	[7] 2001.0.			
	Rainbow trout, Oncorhynchus mykiss, and brook trout, Salvelinus fontinalis, acute.	[7] 2019.0.			
7. Toxicity, acute, estuarine and marine organisms of the Atlantic Ocean and Gulf of Mexico, LC50, percent effluent.	Mysid, Mysidopsis, bahia, acute	[7] 2007.0			
	Sheepshead minnow, Cyprinodon variegatus, acute.	[7] 2004.0			
	Silverside, Menidia beryllina, Menidia menidia, and Menidia peninsulae, acute.	[7] 2006.0.			
8. Toxicity, chronic, fresh water organisms, NOEC or IC25, percent effluent.	Fathead minnow, Pimephales promelas, larval survival and growth.	[8] 1000.0			
	Fathead minnow, Pimephales promelas, embryo-larval survival and teratogenicity.	[8] 1001.0.			
	Daphnia, Ceriodaphnia dubia, survival and reproduction.	[8] 1002.0.			
	Green alga, Selenastrum capricornutum, growth	[8] 1003.0.			
9. Toxicity, chronic, estuarine and marine organisms of the Atlantic Ocean and Gulf of Mexico, NOEC or IC25, percent effluent.	Sheepshead minnow, Cyprinodon variegatus, larval survival and growth.	[9] 1004.0			
	Sheepshead minnow, Cyprinodon variegatus, embryo-larval survival and teratogenicty.	[9] 1005.0			
	Inland silverside, Menidia beryllina, larval survival and growth.	[9] 1006.0			
	Mysid, Mysidopsis bahia, survival, growth, and fecundity.	[9] 1007.0.			
	Sea urchin, Arbacia punctulata, fertilization	[9] 1008.0.			

Notes to Table IA:

[1] The method must be specified when results are reported.

[2] A 0.45 μm membrane filter (MF) or other pore size certified by the manufacturer to fully retain organisms to be cultivated and to be free of extractables which could interfere with their growth.

[3] USEPA. 1978. Microbiological Methods for Monitoring the Environment, Water, and Wastes. Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, Cincinnati, Ohio. EPA/600/8–78/017.
[4] APHA. 1998, 1995, 1992. Standard Methods for the Examination of Water and Wastewater. American Public Health Association. 20th, 19th, and 18th Editions. Amer. Publ. Hlth. Assoc., Washington, DC.
[5] USGS. 1989. U.S. Geological Survey Techniques of Water-Resource Investigations, Book 5, Laboratory Analysis, Chapter A4, Methods for Collection and Analysis of Aquatic Biological and Microbiological Samples, U.S. Geological Survey, U.S. Department of the Interior, Reston, Virginia.
[6] Because the MF technique usually yields low and variable recovery from chlorinated wastewaters, the Most Probable Number method will be required to resolve any controversies.
[7] USEPA. October 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. Fifth Edition. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA 821–R–02–012.
[8] USEPA. October 2002. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Fourth Edition. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA 821–R–02–013.
[9] USEPA. October 2002. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms. Third Edition. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA 821–R–02–014.

TABLE IB—LIST OF APPROVED INORGANIC TEST PROCEDURES

Parameter, units and method	Reference (method number or page)				
	EPA [1, 35]	*Standard Methods* [Edition(s)]	ASTM	USGS [2]	Other
1. Acidity, as $CaCO_3$, mg/L:					
Electrometric endpoint or phenolphthalein endpoint.	305.1	2310 B(4a) [18th, 19th, 20th].	D1067–92	I–1020–85 I–2030–85	
2. Alkalinity, as $CaCO_3$, mg/L:					
Electrometric of Colorimetric titration to pH 4.5, manual or automatic.	310.1 310.2.	2320 B [18th, 19th, 20th]	D1067–92	I–1030–85 I–2030–85	973.43 [3]
3. Aluminium—Total,[4] mg/L; Digestion [4] followed by:					
AA direct aspiration [36]	202.1	3111 D [18th, 19th]		I–3051–85	
AA furnace	202.2	3113 B [18th, 19th].			
Inductively Coupled Plasma/Atomic Emission Spectrometry (ICP/AES) [36].	200.7 [5]	3120 B [18th, 19th, 20th]		I–4471–97 [50]	
Direct Current Plasma (DCP) [36]			D4190–94		Note 34.
Colorimetric (Eriochrome cyanine R).		3500–Al B [20th] and 3500–Al D [18th, 19th].			
4. Ammonia (as N), mg/L:					
Manual, distillation (at pH 9.5) [6] followed by.	350.2	4500–NH_3 B [18th, 19th, 20th].			973.49 [3]
Nesslerization	350.2	4500–NH_3 C [18th]	D1426–98(A)	I–3520–85	973.49 [3]
Titration	350.2	4500–NH_3 C [19th, 20th] and 4500–NH_3 E [18th].			
Electrode	350.3	4500–NH_3 D or E [19th, 20th] and 4500–NH_3 F or G [18th].	D1426–98(B).		
Automated phenate, or	350.1	4500–NH_3 G [19th, 20th] and 4500–NH_3 H [18th].		I–4523–85	
Automated electrode					Note 7.

5. Antimony–Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration[36]	204.1	3111 B [18th, 19th]			
AA furnace	204.2	3113 B [18th, 19th]			
ICP/AES[36]	200.7[5]	3120 B [18th, 19th, 20th]			
6. Arsenic–Total[4] mg/L:					
Digestion[4] followed by	206.5				
AA gaseous hydride	206.3	3114 B 4.d [18th, 19th]	D2972–97(B)	I–3062–85	
AA furnace	206.2	3113 B [18th, 19th]	D2972–97(C)	I–4063–98[49]	
ICP/AES[36] or	200.7[5]	3120 B [18th, 19th, 20th].			
Colorimetric (SDDC)	206.4	3500–As B [20th] and 3500–As C [18th, 19th].	D2972–97(A)	I–3060–85	
7. Barium–Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration[14]	208.1	3111 D [18th, 19th]		I–3084–85	
AA furnace	208.2	3113 B [18th, 19th]	D4382–95		
ICP/AES[14]	200.7[5]	3120 B [18th, 19th, 20th]			
DCP[14]					Note 34.
8. Beryllium–Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration	210.1	3111 D [18th, 19th]	D3645–93(88)(A)	I–3095–85	
AA furnace	210.2	3113 B [18th, 19th]	D3645–93(88)(B)		
ICP/AES	200.7[5]	3120 B [18th, 19th, 20th]		I–4471–97[50]	
DCP, or			D4190–94		Note 34.
Colorimetric (aluminon		3500–Be D [18th, 19th]			
9. Biochemical oxygen demand (BOD_5), mg/L:					
Dissolved Oxygen Depletion	405.1	5210 B [18th, 19th, 20th]		I–1578–78[8]	973.44,[3] p. 17[9]
10. Boron[37]–Total, mg/L:					
Colorimetric (curcumin)	212.3	4500–B B [18th, 19th, 20th]		I–3112–85	
ICP/AES, or	200.7[5]	3120 B [18th, 19th, 20th]		I–4471–97[50]	
DCP			D4190–94		Note 34.
11. Bromide, mg/L:					
Titrimetric	320.1		D1246–95(C)	I–1125–85	p. S44[10]
12. Cadmium—Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration[36]	213.1	3111 B or C [18th, 19th]	D3557–95 (A or B)	I–3135–85 or I–3136–85	974.27,[3] p. 37[9]
AA furnace	213.2	3113 B [18th, 19th]	D3557–95(D)	I–4138–89[51]	
ICP/AES[36]	200.7[5]	3120 B [18th, 19th, 20th]		I–1472–85 or I–4471–97[50]	
DCP[36]			D4190–94		Note 34.
Voltametry[11], or			D3557–95(C).		
Colorimetric (Dithizone)		3500–Cd D [18th, 19th].			
13. Calcium—Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration	215.1	3111 B [18th, 19th]	D511–93(B)	I–3152–85	
ICP/AES	200.7[5]	3120 B [18th, 19th, 20th]		I–4471–97[50]	
DCP, or					Note 34.
Titrimetric (EDTA)	215.2	3500–Ca B [20th] and 3500–Ca D [18th, 19th].	D511–93(A).		
14. Carbonaceous biochemical oxygen demand (CBOD 3), mg/L[12]:					

TABLE IB—LIST OF APPROVED INORGANIC TEST PROCEDURES—Continued

Parameter, units and method	Reference (method number or page)				
	EPA [1, 35]	*Standard Methods* [Edition(s)]	ASTM	USGS [2]	Other
Dissolved Oxygen Depletion with nitrification inhibitor.	.....	5210 B [18th, 19th, 20th].			
15. Chemical oxygen demand (COD), mg/L; Titrimetric	410.1	5220 C [18th, 19th, 20th] ...	D1252–95(A)	I–3560–85	973.46,[3] p. 17 [9]
or	410.2	.....	.....	I–3562–85	
Spectrophotometric, manual or automatic.	410.3. 410.4.	5220 D [18th, 19th, 20th] ...	D1252–95(B)	I–3561–85	Notes 13, 14.
16. Chloride, mg/L:					
Titrimetric (silver nitrate) or	.....	4500–Cl^- B [18th, 19th, 20th].	D512–89(B)	I–1183–85	
(Mercuric nitrate)	325.3	4500–Cl^- C [18th, 19th, 20th].	D512–89(A)	I–1184–85	973.51 [3]
Colorimetric, manual or	.....	.....	.....	I–1187–85	
Automated (Ferricyanide)	325.1 or 325.2	4500–Cl^- E [18th, 19th, 20th].	.....	I–2187–85	
17. Chlorine—Total residual, mg/L; Titrimetric:					
Amperometric direct	330.1	4500–Cl D [18th, 19th, 20th].	D1253–86(92).		
Iodometric direct	330.3	4500–Cl B [18th, 19th, 20th].			
Back titration ether end-point [15] or.	330.2	4500–Cl C [18th, 19th, 20th].			
DPD–FAS	330.4	4500–Cl F [18th, 19th, 20th].			
Spectrophotometric, DPD	330.5	4500–Cl G [18th, 19th, 20th].			
Or Electrode	.....	.....	.....	.....	Note 16.
18. Chromium VI dissolved, mg/L; 0.45 micron filtration followed by:					
AA chelation-extraction or	218.4	3111 C [18th, 19th]	.....	I–1232–85	
Colorimetric (Diphenylcarbazide)	.....	3500–Cr B [20th] and 3500–Cr D [18th, 19th].	D1687–92(A)	I–1230–85	
19. Chromium-Total,[4] mg/L; Digestion [4] followed by:					
AA direct aspiration [36]	218.1	3111 B [18th, 19th]	D1687–92(B)	I–3236–85	974.27 [3]
AA chelation-extraction	218.3	3111 C [18th, 19th].			
AA furnace	218.2	3113 B [18th, 19th]	D1687–92(C)	I–3233–93 [46].	
ICP/AES [36]	200.7 [5]	3120 B [18th, 19th, 20th].			
DCP [36] or	.....	.....	D4190–94	.....	Note 34.
Colorimetric (Diphenylcarbazide)	.....	3500–Cr B [20th] and 3500–Cr D [18th, 19th].			

20. Cobalt—Total,[4] mg/L; Digestion [4] followed by:					
AA direct aspiration	219.1	3111 B or C [18th, 19th]	D3558–94(A or B)	I–3239–85	p. 37 [9]
AA furnace	219.2	3113 B [18th, 19th]	D3558–94(C)	I–4243–89 [51].	
ICP/AES	200.7 [5]	3120 B [18th, 19th, 20th]		I–4471–97 [50].	
DCP			D4190–94		Note 34.
21. Color platinum cobalt units or dominant wavelength, hue, luminance purity:					
Colorimetric (ADMI), or.					
(Platinum cobalt), or	110.1	2120 E [18th, 19th, 20th]			Note 18.
Spectrophotometric	110.2	2120 B [18th, 19th, 20th]		I–1250–85	
	110.3	2120 C [18th, 19th, 20th].			
22. Copper—Total,[4] mg/L; Digestion [4] followed by:					
AA direct aspiration [36]	220.1	3111 B or C [18th, 19th]	D1688–95(A or B)	I–3270–85 or I–3271–85	974.27 [3] p. 37 [9]
AA furnace	220.2	3113 B [18th, 19th]	D1688–95(C)	I–4274–89 [51]	
ICP/AES [36]	200.7 [5]	3120 B [18th, 19th, 20th]		I—4471—97 [50]	
DCP [36] or			D4190–94		Note 34.
Colorimetric (Neocuproine) or		3500–Cu B [20th] and 3500–Cu D [18th, 19th].			
(Bicinchoninate)		3500–Cu C [20th] and 3500–As B [18th, 19th].			Note 19.
23. Cyanide—Total, mg/L:					
Manual distillation with $MgCl_2$ followed by..		4500–CN C [18th, 19th, 20th].	D2036–98(A)		
Titrimetric, or		4500–CN D [18th, 19th, 20th].			p. 22 [9]
Spectrophotometric, manual or	335.2 [31]	4500–CN E [18th, 19th, 20th].	D2036–98(A)	I–3300–85	
Automated [20]	335.3 [31]			I–4302–85	
24. Available Cyanide, mg/L:					
Manual distillation with $MgCl_2$ followed by titrimetric or Spectrophotometric.	335.1	4500–CN G [18th, 19th, 20th].	D2036–98(B)		
Flow injection and ligand exchange, followed by amperometry.					OIA–1677 [44]
25. Fluoride—Total, mg/L:					
Manual distillation [6] followed by		4500–F B [18th, 19th, 20th]			
Electrode, manual or	340.2	4500–F C [18th, 19th, 20th]	D1179–93(B)		
Automated				I–4327–85	
Colorimetric (SPADNS)	340.1	4500–F D [18th, 19th, 20th]	D1179–93(A)		
Or Automated complexone	340.3	4500–F E [18th, 19th, 20th]			
26. Gold—Total,[4] mg/L; Digestion [4] followed by:					
AA direct aspiration	231.1	3111 B [18th, 19th]			
AA furnace, or	231.2				
DCP					Note 34.

TABLE IB—LIST OF APPROVED INORGANIC TEST PROCEDURES—Continued

Parameter, units and method	Reference (method number or page)				
	EPA [1, 35]	*Standard Methods* [Edition(s)]	ASTM	USGS [2]	Other
27. Hardness—Total, as $CaCO_3$, mg/L:					
Automated colorimetric,	130.1				
Titrimetric (EDTA), or Ca plus Mg as their carbonates, by inductively coupled plasma or AA direct aspiration (See Parameters 13 and 33).	130.2	2340 B or C [18th, 19th, 20th].	D1126–86(92)	I–1338–85	973.52B [3]
28. Hydrogen ion (pH), pH units:					
Electrometric measurement, or	150.1	4500–H^+ B [18th, 19th, 20th].	D1293–84 (90)(A or B)	I–1586–85	973.41 [3]
Automated electrode				I–2587–85	Note 21.
29. Iridium—Total,[4] mg/L; Digestion [4] followed by:					
AA direct aspiration or	235.1	3111 B [18th, 19th]			
AA furnace	235.2				
30. Iron—Total,[4] mg/L; Digestion [4] followed by:					
AA direct aspiration [36]	236.1	3111 B or C [18th, 19th]	D1068–96(A or B)	I–3381–85	974.27 [3]
AA furnace	236.2	3113 B [18th, 19th]	D1068–96(C)		
ICP/AES [36]	200.7 [5]	3120 B [18th, 19th, 20th]		I–4471–97 [50]	
DCP [36] or			D4190–94		Note 34.
Colorimetric (Phenanthroline)		3500–Fe B [20th] and 3500–Fe D [18th, 19th].	D1068–96(D)		Note 22.
31. Kjeldahl Nitrogen—Total, (as N), mg/L:					
Digestion and distillation followed by.	351.3	4500–N_{org} B or C and 4500–NH_3 B [18th, 19th, 20th].	D3590–89(A)		
Titration	351.3		D3590–89(A)		973.48 [3]
Nesslerization	351.3	4500–NH_3 C [18th]	D3590–89(A)		
Electrode	351.3	4500–NH_3 C [19th, 20th] and 4500–NH_3 E [18th].			
Automated phenate colorimetric	351.1			I–4551–78 [8]	
Semi-automated block digestor colorimetric.	351.2		D3590–89(B)	I–4515–91 [45].	
Manual or block digestor potentiometric.	351.4		D3590–89(A)		
Block digester, followed by Auto distillation and Titration, or.					Note 39.
Nesslerization, or					Note 40.
Flow injection gas diffusion					Note 41.

32. Lead—Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration[36]	239.1	3111 B or C [18th, 19th]	D3559–96(A or B)	I–3399–85	974.27[3]
AA furnace	239.2	3113 B [18th, 19th]	D3559–96(D)	I–4403–89[51]	
ICP/AES[36]	200.7[5]	3120 B [18th, 19th, 20th]		I–4471–97[50]	
DCP[36]			D4190–94		Note 34.
Voltametry[11] or			D3559–96(C)		
Colorimetric (Dithizone)		3500–Pb B [20th] and 3500–Pb D [18th, 19th].			
33. Magnesium—Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration	242.1	3111 B [18th, 19th]	D511–93(B)	I–3447–85	974.27[3]
ICP/AES	200.7[5]	3120 B [18th, 19th, 20th]		I–4471–97[50]	
DCP or					Note 34.
Gravimetric		3500–Mg D [18th, 19th]			
34. Manganese-Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration[36]	243.1	3111 B [18th, 19th]	D858–95(A or B)	I–3454–85	974.27[3]
AA furnace	243.2	3113 B [18th, 19th]	D858–95(C)		
ICP/AES[36]	200.7[5]	3120 B [18th, 19th, 20th]		I–4471–97[50]	
DCP[36], or			D4190–94		Note 34
Colorimetric (Persulfate), or		3500–Mn B [20th] and 3500–Mn D [18th, 19th].			920.203[3]
(Periodate)					Note 23.
35. Mercury—Total,[4] mg/L:					
Cold vapor, manual or	245.1	3112 B [18th, 19th]	D3223–91	I–3462–85	977.22[3]
Automated	245.2				
Oxidation, purge and trap, and cold vapor atomic fluorescence spectrometry (ng/L).	1631E[43]				
36. Molybdenum—Total[4], mg/L; Digestion[4] followed by:					
AA direct aspiration	246.1	3111 D [18th, 19th]		I–3490–85	
AA furnace	246.2	3113 B [18th, 19th]		I–3492–96[47]	
ICP/AES	200.7[5]	3120 B [18th, 19th, 20th]		I–4471–97[50]	
DCP					Note 34.
37. Nickel—Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration[36]	249.1	3111 B or C [18th, 19th]	D1886–90(A or B)	I–3499–85.	
AA furnace	249.2	3113 B [18th, 19th]	D1886–90(C)	I–4503–89[51].	
ICP/AES[36]	200.7[5]	3120 B [18th, 19th, 20th]		I–4471–97[50].	
DCP[36], or			D4190–94		Note 34.
Colorimetric (heptoxime)		3500–Ni D [17th].			
38. Nitrate (as N), mg/L:					
Colorimetric (Brucine sulfate), or Nitrate-nitrite N minus Nitrite N (See parameters 39 and 40).	352.1				973.50,[3] 419D,[17] p. 28[9]
39. Nitrate-nitrite (as N), mg/L:					

TABLE IB—LIST OF APPROVED INORGANIC TEST PROCEDURES—Continued

Parameter, units and method	Reference (method number or page)				
	EPA [1, 35]	*Standard Methods* [Edition(s)]	ASTM	USGS [2]	Other
Cadmium reduction, Manual or ..	353.3	4500–NO_3^- E [18th, 19th, 20th].	D3867–99(B).		
Automated, or	353.2	4500–NO_3^- F [18th, 19th, 20th].	D3867–99(A)	I–4545–85.	
Automated hydrazine	353.1	4500–NO_3^- H [18th, 19th, 20th].			
40. Nitrite (as N), mg/L; Spectrophotometric:					
Manual or	354.1	4500–NO_2^- B [18th, 19th, 20th].			Note 25.
Automated (Diazotization)				I–4540–85.	
41. Oil and grease—Total recoverable, mg/L:					
Gravimetric (extraction)	413.1	5520B [18th, 19th, 20th] [38].			
Oil and grease and non-polar material, mg/L: Hexane extractable material (HEM): n-Hexane extraction and gravimetry.	1664A [42]	5520B [18th, 19th, 20th] [38].			
Silica gel treated HEM (SGT–HEM): Silica gel treatment and gravimetry.	1664A [42].				
42. Organic carbon—Total (TOC), mg/L:					
Combustion or oxidation	415.1	5310 B, C, or D [18th, 19th, 20th].	D2579–93 (A or B)		973.47,[3] p. 14 [24]
43. Organic nitrogen (as N), mg/L: Total Kjeldahl N (Parameter 31) minus ammonia N (Parameter 4).					
44. Orthophosphate (as P), mg/L; Ascorbic acid method:					
Automated, or	365.1	4500–P F [18th, 19th, 20th]		I–4601–85	973.56 [3]
Manual single reagent	365.2	4500–P E [18th, 19th, 20th]	D515–88(A)		973.55 [3]
Manual two reagent	365.3.				
45. Osmium—Total [4], mg/L; Digestion [4] followed by:					
AA direct aspiration, or	252.1	3111 D [18th, 19th].			
AA furnace	252.2.				
46. Oxygen, dissolved, mg/L:					
Winkler (Azide modification), or	360.2	4500–O C [18th, 19th, 20th]	D888–92(A)	I–1575–78 [8]	973.45B [3]
Electrode	360.1	4500–O G [18th, 19th, 20th].	D888–92(B)	I–1576–78 [8].	

47. Palladium—Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration, or	253.1	3111 B [18th, 19th]			p. S27[10]
AA furnace	253.2				p. S28[10]
DCP					Note 34.
48. Phenols, mg/L:					
Manual distillation[26]	420.1				Note 27.
Followed by:.					
Colorimetric (4AAP) manual, or.	420.1				Note 27.
Automated[19]	420.2.				
49. Phosphorus (elemental), mg/L:					
Gas-liquid chromatography					Note 28.
50. Phosphorus—Total, mg/L:					
Persulfate digestion followed by	365.2	4500–P B, 5 [18th, 19th, 20th].			973.55[3]
Manual or	365.2 or 365.3	4500–P E [18th, 19th, 20th]	D515–88(A)		
Automated ascorbic acid reduction.	365.1	4500–P F [18th, 19th, 20th]		I–4600–85	973.56[3]
Semi-automated block digestor	365.4		D515–88(B)	I–4610–91[48].	
51. Platinum—Total,[4] mg/L: Digestion[4] followed by:					
AA direct aspiration	255.1	3111 B [18th, 19th].			
AA furnace	255.2.				
DCP					Note 34
52. Potassium—Total,[4] mg/L: Digestion[4] followed by:					
AA direct aspiration	258.1	3111 B [18th, 19th]		I–3630–85	973.53[3]
ICP/AES	200.7[5]	3120 B [18th, 19th, 20th].			
Flame photometric, or		3500–K B [20th] and 3500–K D [18th, 19th].			
Colorimetric					317 B[17]
53. Residue—Total, mg/L:					
Gravimetric, 103–105°	160.3	2540 B [18th, 19th, 20th]		I–3750–85.	
54. Residue—filterable, mg/L:					
Gravimetric, 180°	160.1	2540 C [18th, 19th, 20th]		I–1750–85.	
55. Residue—nonfilterable (TSS), mg/L:					
Gravimetric, 103–105° post washing of residue.	160.2	2540 D [18th, 19th, 20th]		I–3765–85.	
56. Residue—settleable, mg/L:					
Volumetric, (Imhoff cone), or gravimetric.	160.5	2540 F [18th, 19th, 20th].			
57. Residue—Volatile, mg/L:					
Gravimetric, 550°	160.4			I–3753–85.	
58. Rhodium-Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration, or	265.1	3111 B [18th, 19th].			
AA furnace	265.2.				

TABLE IB—LIST OF APPROVED INORGANIC TEST PROCEDURES—Continued

Parameter, units and method	Reference (method number or page)				
	EPA [1, 35]	*Standard Methods* [Edition(s)]	ASTM	USGS [2]	Other
59. Ruthenium—Total,[4] mg/L; Digestion [4] followed by:					
AA direct aspiration, or	267.1	3111 B [18th, 19th].			
AA furnace	267.2.				
60. Selenium—Total,[4] mg/L; Digestion [4] followed by:					
AA furnace	270.2	3113 B [18th, 19th]	D3859–98(B)	I–4668–98 [49].	
ICP/AES,[36] or	200.7 [5]	3120 B [18th, 19th, 20th].			
AA gaseous hydride		3114 B [18th, 19th]	D3859–98(A)	I–3667–85.	
61. Silica [37]—Dissolved, mg/L; 0.45 micron filtration followed by:					
Colorimetric, Manual or	370.1	4500–SiO_2 C [20th] and 4500–Si D [18th, 19th].	D859–94	I–1700–85.	
Automated (Molybdosilicate), or				I–2700–85.	
ICP	200.7 [5]	3120 B [18th, 19th, 20th]		I–4471–97 [50].	
62. Silver—Total,[4] mg/L: Digestion [4 29] followed by:					
AA direct aspiration	272.1	3111 B or C [18th, 19th]		I–3720–85	974.27,[3] p. 37 [9]
AA furnace	272.2	3113 B [18th, 19th]		I–4724–89 [51]	
ICP/AES	200.7 [5]	3120 B [18th, 19th, 20th]		I–4471–97 [50]	
DCP					Note 34.
63. Sodium—Total,[4] mg/L; Digestion [4] followed by:					
AA direct aspiration	273.1	3111 B [18th, 19th]		I–3735–85	973.54 [3]
ICP/AES	200.7 [5]	3120 B [18th, 19th, 20th]		I–4471–97 [50]	
DCP, or					Note 34.
Flame photometric		3500 Na B [20th] and 3500 Na D [18th, 19th].			
64. Specific conductance, micromhos/cm at 25 °C:					
Wheatstone bridge	120.1	2510 B [18th, 19th, 20th]	D1125–95(A)	I–2781–85	973.40 [3]
65. Sulfate (as SO_4), mg/L:					
Automated colorimetric (barium chloranilate).	375.1.				
Gravimetric	375.3	4500–SO_4^{-2}C or D [18th, 19th, 20th].			925.54 [3]
Turbidimetric	375.4		D516–90		426C [30]
66. Sulfide (as S), mg/L:					
Titrimetric (iodine), or	376.1	4500–S^{-2}F [19th, 20th] or 4500–S^{-2}E [18th].		I–3840–85.	
Colorimetric (methylene blue)	376.2	4500–S^{-2}D [18th, 19th, 20th].			
67. Sulfite (as SO_3), mg/L:					

Titrimetric (iodine-iodate)	377.1	4500–SO_3^{-2}B [18th, 19th, 20th].			
68. Surfactants, mg/L:					
Colorimetric (methylene blue)	425.1	5540 C [18th, 19th, 20th]	D2330–88.		
69. Temperature, °C:					
Thermometric	170.1	2550 B [18th, 19th, 20th]			Note 32.
70. Thallium—Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration	279.1	3111 B [18th, 19th].			
AA furnace	279.2.				
ICP/AES	200.7[5]	3120 B [18th, 19th, 20th].			
71. Tin—Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration	282.1	3111 B [18th, 19th]		I–3850–78[8].	
AA furnace, or	282.2	3113 B [18th, 19th].			
ICP/AES	200.7[5].				
72. Titanium—Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration	283.1	3111 D [18th, 19th].			
AA furnace	283.2.				
DCP					Note 34.
73. Turbidity, NTU:					
Nephelometric	180.1	2130 B [18th, 19th, 20th]	D1889–94(A)	I–3860–85.	
74. Vanadium—Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration	286.1	3111 D [18th, 19th].			
AA furnace	286.2		D3373–93.		
ICP/AES	200.7[5]	3120 B [18th, 19th, 20th]		I–4471–97[50].	
DCP, or			D4190–94		Note 34.
Colorimetric (Gallic Acid)		3500–V B [20th] and 3500–V D [18th, 19th].			
75. Zinc—Total,[4] mg/L; Digestion[4] followed by:					
AA direct aspiration[36]	289.1	3111 B or C [18th, 19th]	D1691–95(A or B)	I–3900–85	974.27,[3] p. 37[9]
AA furnace	289.2.				
ICP/AES[36]	200.7[5]	3120 B [18th, 19th, 20th]		I–4471–97[50].	
DCP,[36] or			D4190–94		Note 34.
Colorimetric (Dithizone) or		3500–Zn E [18th, 19th].			
(Zincon)		3500–Zn B [20th] and 3500–Zn F [18th, 19th].			Note 33.

Table 1B Notes:

[1] "Methods for Chemical Analysis of Water and Wastes," Environmental Protection Agency, Environmental Monitoring Systems Laboratory—Cincinnati (EMSL–CI), EPA–600/4–79–020, Revised March 1983 and 1979 where applicable.

[2] Fishman, M.J., *et al.* "Methods for Analysis of Inorganic Substances in Water and Fluvial Sediments, "U.S. Department of the Interior, Techniques of Water-Resource Investigations of the U.S. Geological Survey, Denver, CO, Revised 1989, unless otherwise stated.

[3] "Official Methods of Analysis of the Association of Official Analytical Chemists," methods manual, 15th ed. (1990).

[4] For the determination of total metals the sample is not filtered before processing. A digestion procedure is required to solubilize suspended material and to destroy possible organic-metal complexes. Two digestion procedures are given in ''Methods for Chemical Analysis of Water and Wastes, 1979 and 1983''. One (Section 4.1.3), is a vigorous digestion using nitric acid. A less vigorous digestion using nitric and hydrochloric acids (Section 4.1.4) is preferred; however, the analyst should be cautioned that this mild digestion may not suffice for all samples types. Particularly, if a colorimetric procedure is to be employed, it is necessary to ensure that all organo-metallic bonds be broken so that the metal is in a reactive state. In those situations, the vigorous digestion is to be preferred making certain that at no time does the sample go to dryness. Samples containing large amounts of organic materials may also benefit by this vigorous digestion, however, vigorous digestion with concentrated nitric acid will convert antimony and tin to insoluble oxides and render them unavailable for analysis. Use of ICP/AES as well as determinations for certain elements such as antimony, arsenic, the noble metals, mercury, selenium, silver, tin, and titanium require a modified sample digestion procedure and in all cases the method write-up should be consulted for specific instructions and/or cautions.

Note to Table 1B Note 4: If the digestion procedure for direct aspiration AA included in one of the other approved references is different than the above, the EPA procedure must be used. Dissolved metals are defined as those constituents which will pass through a 0.45 micron membrane filter. Following filtration of the sample, the referenced procedure for total metals must be followed. Sample digestion of the filtrate for dissolved metals (or digestion of the original sample solution for total metals) may be omitted for AA (direct aspiration or graphite furnace) and ICP analyses, provided the sample solution to be analyzed meets the following criteria:

a. has a low COD (<20)

b. is visibly transparent with a turbidity measurement of 1 NTU or less

c. is colorless with no perceptible odor, and

d. is of one liquid phase and free of particulate or suspended matter following acidification.

[5] The full text of Method 200.7, ''Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes,'' is given at Appendix C of this Part 136.

[6] Manual distillation is not required if comparability data on representative effluent samples are on company file to show that this preliminary distillation step is not necessary: however, manual distillation will be required to resolve any controversies.

[7] Ammonia, Automated Electrode Method, Industrial Method Number 379–75 WE, dated February 19, 1976, Bran & Luebbe (Technicon) Auto Analyzer II, Bran & Luebbe Analyzing Technologies, Inc., Elmsford, NY 10523.

[8] The approved method is that cited in ''Methods for Determination of Inorganic Substances in Water and Fluvial Sediments'', USGS TWRI, Book 5, Chapter A1 (1979).

[9] American National Standard on Photographic Processing Effluents, Apr. 2, 1975. Available from ANSI, 25 West 43rd Street, New York, NY 10036.

[10] ''Selected Analytical Methods Approved and Cited by the United States Environmental Protection Agency'', Supplement to the Fifteenth Edition of Standard Methods for the Examination of Water and Wastewater (1981).

[11] The use of normal and differential pulse voltage ramps to increase sensitivity and resolution is acceptable.

[12] Carbonaceous biochemical oxygen demand ($CBOD_5$) must not be confused with the traditional BOD_5 test method which measures ''total BOD''. The addition of the nitrification inhibitor is not a procedural option, but must be included to report the $CBOD_5$ parameter. A discharger whose permit requires reporting the traditional BOD_5 may not use a nitrification inhibitor in the procedure for reporting the results. Only when a discharger's permit specifically states $CBOD_5$ is required can the permittee report data using a nitrification inhibitor.

[13] OIC Chemical Oxygen Demand Method, Oceanography International Corporation, 1978, 512 West Loop, PO Box 2980, College Station, TX 77840.

[14] Chemical Oxygen Demand, Method 8000, Hach Handbook of Water Analysis, 1979, Hach Chemical Company, PO Box 389, Loveland, CO 80537.

[15] The back titration method will be used to resolve controversy.

[16] Orion Research Instruction Manual, Residual Chlorine Electrode Model 97–70, 1977, Orion Research Incorporated, 840 Memorial Drive, Cambridge, MA 02138. The calibration graph for the Orion residual chlorine method must be derived using a reagent blank and three standard solutions, containing 0.2, 1.0, and 5.0 mL 0.00281 N potassium iodate/100 mL solution, respectively.

[17] The approved method is that cited in Standard Methods for the Examination of Water and Wastewater, 14th Edition, 1976.

[18] National Council of the Paper Industry for Air and Stream Improvement, Inc. Technical Bulletin 253, December 1971.

[19] Copper, Biocinchoinate Method, Method 8506, Hach Handbook of Water Analysis, 1979, Hach Chemical Company, PO Box 389, Loveland, CO 80537.

[20] After the manual distillation is completed, the autoanalyzer manifolds in EPA Methods 335.3 (cyanide) or 420.2 (phenols) are simplified by connecting the re-sample line directly to the sampler. When using the manifold setup shown in Method 335.3, the buffer 6.2 should be replaced with the buffer 7.6 found in Method 335.2.

[21] Hydrogen ion (pH) Automated Electrode Method, Industrial Method Number 378–75WA, October 1976, Bran & Luebbe (Technicon) Autoanalyzer II. Bran & Luebbe Analyzing Technologies, Inc., Elmsford, NY 10523.

[22] Iron, 1,10-Phenanthroline Method, Method 8008, 1980, Hach Chemical Company, PO Box 389, Loveland, CO 80537.

[23] Manganese, Periodate Oxidation Method, Method 8034, Hach Handbook of Wastewater Analysis, 1979, pages 2–113 and 2–117, Hach Chemical Company, Loveland, CO 80537.

[24] Wershaw, R.L., *et al*, ''Methods for Analysis of Organic Substances in Water,'' Techniques of Water-Resources Investigation of the U.S. Geological Survey, Book 5, Chapter A3, (1972 Revised 1987) p. 14.

[25] Nitrogen, Nitrite, Method 8507, Hach Chemical Company, PO Box 389, Loveland, CO 80537.

[26] Just prior to distillation, adjust the sulfuric-acid-preserved sample to pH 4 with 1 + 9 NaOH.

[27] The approved method is cited in Standard Methods for the Examination of Water and Wastewater, 14th Edition. The colorimetric reaction is conducted at a pH of 10.0±0.2. The approved methods are given on pp 576–81 of the 14th Edition: Method 510A for distillation, Method 510B for the manual colorimetric procedure, or Method 510C for the manual spectrometric procedure.

[28] R.F. Addison and R.G. Ackman, ''Direct Determination of Elemental Phosphorus by Gas-Liquid Chromatography,'' Journal of Chromatography, Vol. 47, No. 3, pp. 421–426, 1970.

[29] Approved methods for the analysis of silver in industrial wastewaters at concentrations of 1 mg/L and above are inadequate where silver exists as an inorganic halide. Silver halides such as the bromide and chloride are relatively insoluble in reagents such as nitric acid but are readily soluble in an aqueous buffer of sodium thiosulfate and sodium hydroxide to pH of 12. Therefore, for levels of silver above 1 mg/L, 20 mL of sample should be diluted to 100 mL by adding 40 mL each of 2 M $Na_2S_2O_3$ and NaOH. Standards should be prepared in the same manner. For levels of silver below 1 mg/L the approved method is satisfactory.

[30] The approved method is that cited in Standard Methods for the Examination of Water and Wastewater, 15th Edition.

[31] EPA Methods 335.2 and 335.3 require the NaOH absorber solution final concentration to be adjusted to 0.25 N before colorimetric determination of total cyanide.
[32] Stevens, H.H., Ficke, J.F., and Smoot, G.F., ''Water Temperature—Influential Factors, Field Measurement and Data Presentation,'' Techniques of Water-Resources Investigations of the U.S. Geological Survey, Book 1, Chapter D1, 1975.
[33] Zinc, Zincon Method, Method 8009, Hach Handbook of Water Analysis, 1979, pages 2–231 and 2–333, Hach Chemical Company, Loveland, CO 80537.
[34] ''Direct Current Plasma (DCP) Optical Emission Spectrometric Method for Trace Elemental Analysis of Water and Wastes, Method AES0029,'' 1986—Revised 1991, Thermo Jarrell Ash Corporation, 27 Forge Parkway, Franklin, MA 02038.
[35] Precision and recovery statements for the atomic absorption direct aspiration and graphite furnace methods, and for the spectrophotometric SDDC method for arsenic are provided in Appendix D of this part titled, ''Precision and Recovery Statements for Methods for Measuring Metals''.
[36] ''Closed Vessel Microwave Digestion of Wastewater Samples for Determination of Metals'', CEM Corporation, PO Box 200, Matthews, NC 28106–0200, April 16, 1992. Available from the CEM Corporation.
[37] When determining boron and silica, only plastic, PTFE, or quartz laboratory ware may be used from start until completion of analysis.
[38] Only use Trichlorotrifluorethane (1,1,2-trichloro-1,2,2-trifluoroethane; CFC–113) extraction solvent when determining Total Recoverable Oil and Grease (analogous to EPA Method 413.1). Only use *n*-hexane extraction solvent when determining Hexane Extractable Material (analogous to EPA Method 1664A). Use of other extraction solvents is strictly prohibited.
[39] Nitrogen, Total Kjeldahl, Method PAI–DK01 (Block Digestion, Steam Distillation, Titrimetric Detection), revised 12/22/94, OI Analytical/ALPKEM, PO Box 9010, College Station, TX 77842.
[40] Nitrogen, Total Kjeldahl, Method PAI–DK02 (Block Digestion, Steam Distillation, Colorimetric Detection), revised 12/22/94, OI Analytical/ALPKEM, PO Box 9010, College Station, TX 77842.
[41] Nitrogen, Total Kjeldahl, Method PAI–DK03 (Block Digestion, Automated FIA Gas Diffusion), revised 12/22/94, OI Analytical/ALPKEM, PO Box 9010, College Station, TX 77842.
[42] Method 1664, Revision A ''n-Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated n-Hexane Extractable Material (SGT–HEM; Non-polar Material) by Extraction and Gravimetry'' EPA–821–R–98–002, February 1999. Available at NTIS, PB–121949, U.S. Department of Commerce, 5285 Port Royal, Springfield, Virginia 22161.
[43] USEPA. 2002. Method 1631, Revision E, ''Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry.'' September 2002. Office of Water, U.S. Environmental Protection Agency (EPA–821–R–02–019). The application of clean techniques described in EPA's draft Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels (EPA–821–R–96–011) are recommended to preclude contamination at low-level, trace metal determinations.
[44] Available Cyanide, Method OIA–1677 (Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry), ALPKEM, A Division of OI Analytical, PO Box 9010, College Station, TX 77842–9010.
[45] ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Ammonia Plus Organic Nitrogen by a Kjeldahl Digestion Method'', Open File Report (OFR) 00–170.
[46] ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Chromium in Water by Graphite Furnace Atomic Absorption Spectrophotometry'', Open File Report (OFR) 93–449.
[47] ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Molybdenum by Graphite Furnace Atomic Absorption Spectrophotometry'', Open File Report (OFR) 97–198.
[48] ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Total Phosphorus by Kjeldahl Digestion Method and an Automated Colorimetric Finish That Includes Dialysis'' Open File Report (OFR) 92–146.
[49] ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Arsenic and Selenium in Water and Sediment by Graphite Furnace-Atomic Absorption Spectrometry'' Open File Report (OFR) 98–639.
[50] ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Elements in Whole-water Digests Using Inductively Coupled Plasma-Optical Emission Spectrometry and Inductively Coupled Plasma-Mass Spectrometry'', Open File Report (OFR) 98–165.
[51] ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Inorganic and Organic Constituents in Water and Fluvial Sediment'', Open File Report (OFR) 93–125.

TABLE IC—LIST OF APPROVED TEST PROCEDURES FOR NON-PESTICIDE ORGANIC COMPOUNDS

Parameter [1]	EPA method number [2, 7]			Other approved methods		
	GC	GC/MS	HPLC	*Standard Methods* [Edition(s)]	ASTM	Other
1. Acenaphthene	610	625, 1625B	610	6440 B [18th, 19th, 20th].	D4657–92	Note 9, p.27.
2. Acenaphthylene	610	625, 1625B	610	6440 B, 6410 B [18th, 19th, 20th].	D4657–92	Note 9, p.27.
3. Acrolein	603	624[4], 1624B				
4. Acrylonitrile	603	624[4], 1624B				
5. Anthracene	610	625, 1625B	610	6410 B, 6440 B [18th, 19th, 20th].	D4657–92	Note 9, p. 27.

TABLE IC—LIST OF APPROVED TEST PROCEDURES FOR NON-PESTICIDE ORGANIC COMPOUNDS—Continued

Parameter [1]	EPA method number [2, 7]			Other approved methods		
	GC	GC/MS	HPLC	*Standard Methods* [Edition(s)]	ASTM	Other
6. Benzene	602	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6220 B [18th, 19th].		
7. Benzidine		625[5], 1625B	605			Note 3, p.1.
8. Benzo(a)anthracene	610	625, 1625B	610	6410 B, 6440 B [18th, 19th, 20th].	D4657–92	Note 9, p. 27.
9. Benzo(a)pyrene	610,	625, 1625B	610	6410 B, 6440 B [18th, 19th, 20th].	D4657–92	Note 9, p. 27.
10. Benzo(b)fluoranthene	610	625, 1625B	610	6410 B, 6440 B [18th, 19th, 20th].	D4657–92	Note 9, p. 27.
11. Benzo(g, h, i)perylene	610	625, 1625B	610	6410 B, 6440 B [18th, 19th, 20th].	D4657–92	Note 9, p. 27.
12. Benzo(k)fluoranthene	610	625, 1625B	610	6410 B, 6440 B [18th, 19th, 20th].	D4657–92	Note 9, p. 27.
13. Benzyl chloride						Note 3, p 130: Note 6, p. S102.
14. Benzyl butyl phthalate	606	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
15. Bis(2-chloroethoxy) methane	611	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
16. Bis(2-chloroethyl) ether	611	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
17. Bis(2-ethylhexyl) phthalate	606	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
18. Bromodichloromethane	601	624, 1624B		6200 C [20th] and 6230 B [18th, 19th], 6200 B [20th] and 6210 B [18th, 19th].		
19. Bromoform	601	624, 1624B		6200 C [20th] and 6230 B [18th, 19th], 6200 B [20th] and 6210 B [18th, 19th].		
20. Bromomethane	601	624, 1624B		6200 C [20th] and 6230 B [18th, 19th], 6200 B [20th] and 6210 B [18th, 19th].		
21. 4-Bromophenylphenyl ether	611	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
22. Carbon tetrachloride	601	624, 1624B		6200 C [20th] and 6230 B [18th, 19th].		Note 3, p. 130.
23. 4-Chloro-3-methylphenol	604	625,1625B		6410 B, 6420 B [18th, 19th, 20th].		Note 9, p. 27.

24. Chlorobenzene	601, 602	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6220 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th],.		Note 3, p. 130.
25. Chloroethane	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		
26. 2-Chloroethylvinyl ether	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		
27. Chloroform:	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		Note 3, p 130.
28. Chloromethane	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th] 6200C [20th] and 6230 B [18th, 19th].		
29. 2-Chloronaphthalene	612	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
30. 2-Chlorophenol	604	625, 1625B		6410 B, 6420 B [18th, 19th, 20th].		Note 9, p. 27.
31. 4-Chlorophenylphenyl ether	611	625, 1625B		6410 B, [18th, 19th, 20th].		Note 9, p. 27.
32. Chrysene	610	625, 1625B	610	6410 B, 6440 B [18th, 19th, 20th].	D4657–92	Note 9, p. 27.
33. Dibenzo(a,h)anthracene	610	625, 1625B	610	6410 B, 6440 B [18th, 19th, 20th].	D4657–92	Note 9, p. 27.
34. Dibromochloromethane	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th] 6200 C [20th] and 6230 B [18th, 19th].		
35. 1,2-Dichlorobenzene	601, 602, 612	624, 625, 1625B ..		6200 C [20th] and 6220 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th], 6410 B [18th, 19th, 20th].		Note 9, p 27.
36. 1,3-Dichlorobenzene	601, 602, 612	624, 625, 1625B ..		6200 C [20th] and 6220 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th], 6410 B [18th, 19th, 20th].		Note 9, p. 27.

TABLE IC—LIST OF APPROVED TEST PROCEDURES FOR NON-PESTICIDE ORGANIC COMPOUNDS—Continued

Parameter [1]	EPA method number [2, 7]			Other approved methods		
	GC	GC/MS	HPLC	*Standard Methods* [Edition(s)]	ASTM	Other
37. 1,4-Dichlorobenzene	601, 602, 612	624, 625, 1625B		6200 C [20th] and 6220 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th], 6410 B [18th, 19th, 20th].		Note 9, p. 27.
38. 3,3-Dichlorobenzidine		625, 1625B	605	6410 B [18th, 19th, 20th].		
39. Dichlorodifluoromethane	601			6200 C [20th] and 6230 B [18th, 19th].		
40. 1,1-Dichloroethane	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		
41. 1,2-Dichloroethane	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		
42. 1,1-Dichloroethene	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		
43. trans-1,2-Dichloroethene	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		
44. 2,4-Dichlorophenol	604	625, 1625B		6410 B, 6420 B [18th, 19th, 20th].		Note 9, p. 27.
45. 1,2-Dichloropropane	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		
46. cis-1,3-Dichloropropene	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		
47. trans-1,3-Dichloropropene	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		
48. Diethyl phthalate	606	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.

49. 2,4-Dimethylphenol	604	625, 1625B		6410 B, 6420 B [18th, 19th, 20th].		Note 9, p. 27.
50. Dimethyl phthalate	606	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
51. Di-n-butyl phthalate	606	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
52. Di-n-octyl phthalate	606	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
53. 2,3-Dinitrophenol	604	625, 1625B		6410 B, 6420 B [18th, 19th, 20th].		
54. 2,4-Dinitrotoluene	609	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
55. 2,6-Dinitrotoluene	609	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
56. Epichlorohydrin						Note 3, p. 130; Note 6, p. S102.
57. Ethylbenzene	602	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6220 B [18th, 19th].		
58. Fluoranthene	610	625, 1625B	610	6410 B, 6440 B [18th, 19th, 20th].	D4657–92	Note 9, p. 27.
59. Fluorene	610	625, 1625B	610	6410 B, 6440 B [18th, 19th, 20th].	D4657–92	Note 9, p. 27.
60. 1,2,3,4,6,7,8-Heptachloro- dibenzofuran		1613B				
61. 1,2,3,4,7,8,9-Heptachloro- dibenzofuran		1613B				
62. 1,2,3,4,6,7,8-Heptachloro- dibenzo-p-dioxin		1613B				
63. Hexachlorobenzene	612	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
64. Hexachlorobutadiene	612	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
65. Hexachlorocyclopentadiene	612	[5]625, 1625B		6410 [18th, 19th, 20th]		Note 9, p. 27.
66. 1,2,3,4,7,8-Hexachloro- dibenzofuran		1613B.				
67. 1,2,3,6,7,8-Hexachloro- dibenzofuran		1613B.				
68. 1,2,3,7,8,9-Hexachloro- dibenzofuran		1613B.				
69. 2,3,4,6,7,8-Hexachloro- dibenzofuran		1613B.				
70. 1,2,3,4,7,8-Hexachloro- dibenzo-p-dioxin		1613B.				
71. 1,2,3,6,7,8-Hexachloro- dibenzo-p-dioxin		1613B.				
72. 1,2,3,7,8,9-Hexachloro- dibenzo-p-dioxin		1613B.				
73. Hexachloroethane	616	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
74. Ideno(1,2,3-cd) pyrene	610	625, 1625B	610	6410 B, 6440 B [18th, 19th, 20th].	D4657–92	Note 9, p. 27.
75. Isophorone	609	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27.
76. Methylene chloride	601	624, 1624B		6200 C [20th] and 6230 B [18th, 19th].		Note 3, p. 130.
77. 2-Methyl-4,6-dinitrophenol	604	625, 1625B		6420 B, 6410 B [18th, 19th, 20th].		Note 9, p. 27.

TABLE IC—LIST OF APPROVED TEST PROCEDURES FOR NON-PESTICIDE ORGANIC COMPOUNDS—Continued

Parameter [1]	EPA method number [2, 7]			Other approved methods		
	GC	GC/MS	HPLC	*Standard Methods* [Edition(s)]	ASTM	Other
78. Naphthalene	610	625, 1625B	610	6440 B, 6410 B [18th, 19th, 20th].		Note 9, p. 27.
79. Nitrobenzene	609	625, 1625B		6410 B [18th, 19th, 20th].	D4657–92	Note 9, p. 27.
80. 2-Nitrophenol	604	625, 1625B		6410 B, 6420 B [18th, 19th, 20th].		Note 9, p. 27
81. 4-Nitrophenol	604	625, 1625B		6410 B, 6420 B [18th, 19th, 20th].		Note 9, p. 27
82. N-Nitrosodimethylamine	607	625[5], 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27
83. N-Nitrosodi-n-propylamine	607	625, 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27
84. N-Nitrosodiphenylamine	607	625[5], 1625B		6410 B [18th, 19th, 20th].		Note 9, p. 27
85. Octachlorodibenzofuran		1613B.				
86. Octachlorodibenzo-p-dioxin		1613B.				
87. 2,2'-Oxybis(2-chloropropane) [also known as bis(2-chloroisopropyl) ether].	611	625, 1625B		6410 B [18th, 19th, 20th].		
88. PCB–1016	608	625		6410 B [18th, 19th, 20th].		Note 3, p. 43
89. PCB–1221	608	625		6410 B [18th, 19th, 20th].		Note 3, p. 43
90. PCB–1232	608	625		6410 B [18th, 19th, 20th].		Note 3, p. 43
91. PCB–1242	608	625		6410 B [18th, 19th, 20th].		Note 3, p. 43
92. PCB–1248	608	625.				
93. PCB–1254	608	625		6410 B [18th, 19th, 20th].		Note 3, p. 43
94. PCB–1260	608	625		6410 B, 6630 B [18th, 19th, 20th].		Note 3, p. 43
95. 1,2,3,7,8-Pentachloro- dibenzofuran		1613B.				
96. 2,3,4,7,8-Pentachloro- dibenzofuran		1613B.				
97. 1,2,3,7,8,-Pentachlorodibenzo-p-dioxin		1613B.				
98. Pentachlorophenol	604	625, 1625B		6410 B, 6630 B [18th, 19th, 20th].		Note 3, p. 140; Note 9, p. 27
99. Phenanthrene	610	625, 1625B	610	6410 B, 6440 B [18th, 19th, 20th].	D4657–92	Note 9, p. 27
100. Phenol	604	625, 1625B		6420 B, 6410 B [18th, 19th, 20th].		Note 9, p. 27
101. Pyrene	610	625, 1625B	610	6440 B, 6410 B D4675–92 [18th, 19th, 20th].	D4675–92	Note 9, p. 27

102. 2,3,7,8-Tetrachloro- dibenzofuran		1613B.				
103. 2,3,7,8-Tetrachlorodibenzo-p-dioxin		613, 1613B.				
104. 1,1,2,2-Tetrachloroethane	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		Note 3, p. 130
105. Tetrachloroethene	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		Note 3, p. 130
106. Toluene	602	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6220 B [18th, 19th].		
107. 1,2,4-Trichlorobenzene	612	625, 1625B		6410 B [18th, 19th, 20th].		Note 3, p. 130; Note 9, p. 27.
108. 1,1,1-Trichloroethane	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		
109. 1,1,2-Trichloroethane	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		Note 3, p. 130
110. Trichloroethene	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		
111. Trichlorofluoromethane	601	624		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		
112. 2,4,6-Trichlorophenol	604	625, 1625B		6420 B, 6410 B [18th, 19th, 20th].		Note 9, p. 27.
113. Vinyl chloride	601	624, 1624B		6200 B [20th] and 6210 B [18th, 19th], 6200 C [20th] and 6230 B [18th, 19th].		

Table IC notes:

[1] All parameters are expressed in micrograms per liter (µg/L) except for Method 1613B in which the parameters are expressed in picograms per liter (pg/L).

[2] The full text of Methods 601–613, 624, 625, 1624B, and 1625B, are given at Appendix A, ''Test Procedures for Analysis of Organic Pollutants,'' of this Part 136. The full text of Method 1613B is incorporated by reference into this Part 136 and is available from the National Technical Information Services as stock number PB95–104774. The standardized test procedure to be used to determine the method detection limit (MDL) for these test procedures is given at Appendix B, ''Definition and Procedure for the Determination of the Method Detection Limit,'' of this Part 136.

[3] ''Methods for Benzidine: Chlorinated Organic Compounds, Pentachlorophenol and Pesticides in Water and Wastewater,'' U.S. Environmental Protection Agency, September, 1978.

[4] Method 624 may be extended to screen samples for Acrolein and Acrylonitrile. However, when they are known to be present, the preferred method for these two compounds is Method 603 or Method 1624B.

[5] Method 625 may be extended to include benzidine, hexachlorocyclopentadiene, N-nitrosodimethylamine, and N-nitrosodiphenylamine. However, when they are known to be present, Methods 605, 607, and 612, orMethod 1625B, are preferred methods for these compounds.

[6] ''Selected Analytical Methods Approved and Cited by the United States Environmental Protection Agency,'' Supplement to the Fifteenth Edition of Standard Methods for the Examination of Water and Wastewater (1981).

[7] Each Analyst must make an initial, one-time demonstration of their ability to generate acceptable precision and accuracy with Methods 601–603, 624, 625, 1624B, and 1625B (See Appendix A of this Part 136) in accordance with procedures each in Section 8.2 of each of these Methods. Additionally, each laboratory, on an on-going basis must spike and analyze 10% (5% for Methods 624 and 625 and 100% for methods 1624B and 1625B) of all samples to monitor and evaluate laboratory data quality in accordance with Sections 8.3 and 8.4 of these Methods. When the recovery of any parameter falls outside the warning limits, the analytical results for that parameter in the unspiked sample are suspect and cannot be reported to demonstrate regulatory compliance.

NOTE: These warning limits are promulgated as an ''interim final action with a request for comments.''

[8] ''Organochlorine Pesticides and PCBs in Wastewater Using Empore TM Disk'' 3M Corporation Revised 10/28/94.

[9] USGS Method 0–3116–87 from ''Methods of Analysis by U.S. Geological Survey National Water Quality Laboratory—Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments'' U.S. Geological Survey, Open File Report 93–125.

TABLE ID—LIST OF APPROVED TEST PROCEDURES FOR PESTICIDES [1]

Parameter	Method	EPA [2, 7]	*Standard Methods* 18th, 19th, 20th Ed.	ASTM	Other
1. Aldrin	GC	608	6630 B & C	D3086–90	Note 3, p. 7; Note 4, p. 27; Note 8.
	GC/MS	625	6410 B		
2. Ametryn	GC				Note 3, p. 83; Note 6, p S68.
3. Aminocarb	TLC				Note 3, p. 94; Note 6, p. S16.
4. Atraton	GC				Note 3, p. 83; Note 6, p. S68.
5. Atrazine	GC				Note 3, p. 83; Note 6, p. S68; Note 9.
6. Azinphos methyl	GC				Note 3, p. 25; Note 6, p. S51.
7. Barban	TLC				Note 3, p. 104; Note 6, p. S64.
8. α-BHC	GC	608	6630 B & C	D3086–90	Note 3, p. 7; Note 8.
	GC/MS	625 [5]	6410 B.		
9. β-BHC	GC	608	6630 C	D3086–90	Note 8.
	GC/MS	625 [5]	6410 B.		
10. δ-BHC	GC	608	6630 C	D3086–90	Note 8.
	GC/MS	625 [5]	6410 B.		
11. γ-BHC (Lindane)	GC	608	6630 B & C	D3086–90	Note 3, p. 7; Note 4, p. 27; Note 8.
	GC/MS	625	6410 B.		
12. Captan	GC		6630 B	D3086–90	Note 3, p. 7.
13. Carbaryl	TLC				Note 3, p. 94, Note 6, p. S60.
14. Carbophenothion	GC				Note 4, p. 27; Note 6, p. S73.
15. Chlordane	GC	608	6630 B & C	D3086–90	Note 3, p. 7; Note 4, p. 27; Note 8.
	GC/MS	625	6410 B.		
16. Chloropropham	TLC				Note 3, p. 104; Note 6, p. S64.
17. 2,4-D	GC		6640 B		Note 3, p. 115; Note 4, p. 40.
18. 4,4′-DDD	GC	608	6630 B & C	D3086–90	Note 3, p. 7; Note 4, p. 27; Note 8.
	GC/MS	625	6410 B.		
19. 4,4′-DDE	GC	608	6630 B & C	D3086–90	Note 3, p. 7; Note 4, p. 27; Note 8.
	GC/MS	625	6410 B.		
20. 4,4′-DDT	GC	608	6630 B & C	D3086–90	Note 3, p. 7; Note 4, p. 27; Note 8.
	GC/MS	625	6410 B.		
21. Demeton-O	GC				Note 3, p. 25; Note 6, p. S51.
22. Demeton-S	GC				Note 3, p. 25; Note 6, p. S51.
23. Diazinon	GC				Note 3, p. 25; Note 4, p. 27; Note 6, p. S51.
24. Dicamba	GC				Note 3, p. 115.
25. Dichlofenthion	GC				Note 4, p. 27; Note 6, p. S73.
26. Dichloran	GC		6630 B & C		Note 3, p. 7.

27. Dicofol	GC			D3086–90.	
28. Dieldrin	GC	608	6630 B & C		Note 3, p. 7; Note 4, p. 27; Note 8.
	GC/MS	625	6410 B.		
29. Dioxathion	GC				Note 4, p. 27; Note 6, p. S73.
30. Disulfoton	GC				Note 3, p. 25; Note 6 p. S51.
31. Diuron	TLC				Note 3, p. 104; Note 6, p. S64.
32. Endosulfan I	GC	608	6630 B & C	D3086–90	Note 3, p. 7; Note 4, p. 27; Note 8.
	GC/MS	625[5]	6410 B.		
33. Endosulfan II	GC	608	6630 B & C	D3086–90	Note 3, p. 7; Note 8.
	GC/MS	625[5]	6410 B.		
34. Endosulfan Sulfate	GC	608	6630 C		Note 8.
	GC/MS	625	6410 B.		
35. Endrin	GC	608	6630 B & C	D3086–90	Note 3, p. 7; Note 4, p. 27; Note 8.
	GC/MS	625[5]	6410 B.		
36. Endrin aldehyde	GC	608			Note 8.
	GC/MS	625.			
37. Ethion	GC				Note 4, p. 27; Note 6, p. S73.
38. Fenuron	TLC				Note 3, p. 104; Note 6, p. S64.
39. Fenuron-TCA	TLC				Note 3, p. 104; Note 6, p. S64.
40. Heptachlor	GC	608	6630 B & C	3086–90	Note 3, p. 7; Note 4, p. 27; Note 8.
	GC/MS	625	6410 B.		
41. Heptachlor epoxide	GC	608	6630 B & C	D3086–90	Note 3, p. 7; Note 4, p. 27; Note 6, p. S73; Note 8.
	GC/MS	625	6410 B.		
42. Isodrin	GC				Note 4, p. 27; Note 6, p. S73.
43. Linuron	GC				Note 3, p. 104; Note 6, p. S64.
44. Malathion	GC		6630 C		Note 3, p. 25; Note 4, p. 27; Note 6, p. S51
45. Methiocarb	TLC				Note 3, p. 94; Note 6, p. S60.
46. Methoxychlor	GC		6630 B & C	D3086–90	Note 3, p. 7; Note 4, p. 27; Note 8.
47. Mexacarbate	TLC				Note 3, p. 94; Note 6, p. S60.
48. Mirex	GC		6630 B & C		Note 3, p. 7; Note 4, p. 27.
49. Monuron	TLC				Note 3, p. 104; Note 6, p. S64.
50. Monuron	TLC				Note 3, p. 104; Note 6, p. S64.
51. Nuburon	TLC				Note 3, p. 104; Note 6, p. S64.
52. Parathion methyl	GC		6630 C		Note 3, p. 25; Note 4, p. 27.
53. Parathion ethyl	GC		6630 C		Note 3, p. 25; Note 4, p. 27.
54. PCNB	GC		6630 B & C		Note 3, p. 7.
55. Perthane	GC			D3086–90	Note 4, p. 27.
56. Prometron	GC				Note 3, p. 83; Note 6, p. S68; Note 9.
57. Prometryn	GC				Note 3, p. 83; Note 6, p. S68; Note 9.
58. Propazine	GC				Note 3, p. 83; Note 6, p. S68; Note 9.
59. Propham	TLC				Note 3, p. 104; Note 6, p. S64.
60. Propoxur	TLC				Note 3, p. 94; Note 6, p. S60.
61. Secbumeton	TLC				Note 3, p. 83; Note 6, p. S68.
62. Siduron	TLC				Note 3, p. 104; Note 6, p. S64.
63. Simazine	GC				Note 3, p. 83; Note 6, p. S68; Note 9.
64. Strobane	GC		6630 B & C		Note 3, p. 7.
65. Swep	TLC				Note 3, p. 104; Note 6, p. S64.
66. 2,4,5-T	GC		6640 B		Note 3, p. 115; Note 4, p. 40.

TABLE ID—LIST OF APPROVED TEST PROCEDURES FOR PESTICIDES [1]—Continued

Parameter	Method	EPA [2, 7]	*Standard Methods* 18th, 19th, 20th Ed.	ASTM	Other
67. 2,4,5-TP (Silvex)	GC		6640 B		Note 3, p. 115; Note 4, p. 40.
68. Terbuthylazine	GC				Note 3, p. 83; Note 6, p. S68.
69. Toxaphene	GC	608	6630 B & C	D3086—90	Note 3, p. 7; Note 4, p. 27; Note 8.
	GC/MS	625	6410B.		
70. Trifluralin	GC		6630 B		Note 3, p. 7; Note 9.

Table ID notes:

[1] Pesticides are listed in this table by common name for the convenience of the reader. Additional pesticides may be found under Table 1C, where entries are listed by chemical name.

[2] The full text of Methods 608 and 625 are given at Appendix A. ''Test Procedures for Analysis of Organic Pollutants,'' of this Part 136. The standardized test procedure to be used to determine the method detection limit (MDL) for these test procedures is given at Appendix B, ''Definition and Procedure for the Determination of the Method Detection Limit,'' of this Part 136.

[3] ''Methods for Benzidine, Chlorinated Organic Compounds, Pentachlorophenol and Pesticides in Water and Wastewater,'' U.S. Environmental Protection Agency, September 1978. This EPA publication includes thin-layer chromatography (TLC) methods.

[4] ''Methods for Analysis of Organic Substances in Water and Fluvial Sediments,'' Techniques of Water-Resources Investigations of the U.S. Geological Survey, Book 5, Chapter A3 (1987).

[5] The method may be extended to include α-BHC, γ-BHC, endosulfan I, endosulfan II, and endrin. However, when they are known to exist, Method 608 is the preferred method.

[6] ''Selected Analytical Methods Approved and Cited by the United States Environmental Protection Agency.'' Supplement to the Fifteenth Edition of Standard Methods for the Examination of Water and Wastewater (1981).

[7] Each analyst must make an initial, one-time, demonstration of their ability to generate acceptable precision and accuracy with Methods 608 and 625 (See Appendix A of this Part 136) in accordance with procedures given in Section 8.2 of each of these methods. Additionally, each laboratory, on an on-going basis, must spike and analyze 10% of all samples analyzed with Method 608 or 5% of all samples analyzed with Method 625 to monitor and evaluate laboratory data quality in accordance with Sections 8.3 and 8.4 of these methods. When the recovery of any parameter falls outside the warning limits, the analytical results for that parameter in the unspiked sample are suspect and cannot be reported to demonstrate regulatory compliance. These quality control requirements also apply to the Standard Methods, ASTM Methods, and other Methods cited.

Note: These warning limits are promulgated as an ''Interim final action with a request for comments.''

[8] ''Organochlorine Pesticides and PCBs in Wastewater Using Empore™ Disk'', 3M Corporation, Revised 10/28/94.

[9] USGS Method 0–3106–93 from ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Triazine and Other Nitrogen-containing Compounds by Gas Chromatography with Nitrogen Phosphorus Detectors'' U.S. Geological Survey Open File Report 94–37.

TABLE IE—LIST OF APPROVED RADIOLOGIC TEST PROCEDURES

Parameter and units	Method	Reference (method number or page)			
		EPA[1]	*Standard Methods* 18th, 19th, 20th Ed.	ASTM	USGS[2]
1. Alpha-Total, pCi per liter	Proportional or scintillation counter	900	7110 B	D1943–90	pp. 75 and 78[3]
2. Alpha-Counting error, pCi per liter	Proportional or scintillation counter	Appendix B	7110 B	D1943–90	p. 79
3. Beta-Total, pCi per liter	Proportional counter	900.0	7110 B	D1890–90	pp. 75 and 78[3]
4. Beta-Counting error, pCi	Proportional counter	Appendix B	7110 B	D1890–90	p. 79
5. (a) Radium Total pCi per liter	Proportional counter	903.0	7500Ra B	D2460–90	
(b) Ra, pCi per liter	Scintillation counter	903.1	7500Ra C	D3454–91	p. 81

Table 1E notes:

[1] ''Prescribed Procedures for Measurement of Radioactivity in Drinking Water,'' EPA–600/4–80–032 (1980), U.S. Environmental Protection Agency, August 1980.

[2] Fishman, M.J. and Brown, Eugene, ''Selected Methods of the U.S. Geological Survey of Analysis of Wastewaters,'' U.S. Geological Survey, Open-File Report 76–177 (1976).

[3] The method found on p. 75 measures only the dissolved portion while the method on p. 78 measures only the suspended portion. Therefore, the two results must be added to obtain the ''total''.

TABLE IF—LIST OF APPROVED METHODS FOR PHARMACEUTICAL POLLUTANTS

Pharmaceuticals pollutants	CAS registry No.	Analytical method number
acetonitrile	75–05–8	1666/1671/D3371/D3695.
n-amyl acetate	628–63–7	1666/D3695.
n-amyl alcohol	71–41–0	1666/D3695
benzene	71–43–2	D4763/D3695/502.2/524.2.
n-butyl-acetate	123–86–4	1666/D3695.
tert-butyl alcohol	75–65–0	1666.
chlorobenzene	108–90–7	502.2/524.2.
chloroform	67–66–3	502.2/524.2/551.
o-dichlorobenzene	95–50–1	1625C/502.2/524.2.
1,2-dichloroethane	107–06–2	D3695/502.2/524.2.
diethylamine	109–89–7	1666/1671.
dimethyl sulfoxide	67–68–5	1666/1671.
ethanol	64–17–5	1666/1671/D3695.
ethyl acetate	141–78–6	1666/D3695.
n-heptane	142–82–5	1666/D3695.
n-hexane	110–54–3	1666/D3695.
isobutyraldehyde	78–84–2	1666/1667.
isopropanol	67–63–0	1666/D3695.
isopropyl acetate	108–21–4	1666/D3695.
isopropyl ether	108–20–3	1666/D3695.
methanol	67–56–1	1666/1671/D3695.
Methyl Cellosolve Δ	109–86–4	1666/1671
methylene chloride	75–09–2	502.2/524.2
methyl formate	107–31–3	1666.
4-methyl-2-pentanone (MIBK)	108–10–1	1624C/1666/D3695/D4763/524.2.
phenol	108–95–2	D4763.
n-propanol	71–23–8	1666/1671/D3695.
2-propanone (acetone)	67–64–1	D3695/D4763/524.2.
tetrahydrofuran	109–99–9	1666/524.2.
toluene	108–88–3	D3695/D4763/502.2/524.2.
triethlyamine	121–44–8	1666/1671.
xylenes	(Note 1)	1624C/1666.

Table 1F note:
1. 1624C: m-xylene 108–38–3, o,p-xylene E–14095 (Not a CAS number; this is the number provided in the Environmental Monitoring Methods Index (EMMI) database.); 1666: m,p-xylene 136777–61–2, o-xylene 95–47–6.

(b) The full texts of the methods from the following references which are cited in Tables IA, IB, IC, ID, IE,and IF are incorporated by reference into this regulation and may be obtained from the sources identified. All costs cited are subject to change and must be verified from the indicated sources. The full texts of all the test procedures cited are available for inspection at the National Exposure Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, 26 West Martin Luther King Dr., Cincinnati, OH 45268 and the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

REFERENCES, SOURCES, COSTS, AND TABLE CITATIONS:

(1) The full texts of Methods 601–613, 624, 625, 1613, 1624, and 1625 are printed in appendix A of this part 136. The full text for determining the method detection limit when using the test procedures is given in appendix B of this part 136. The full text of Method 200.7 is printed in appendix C of this part 136. Cited in: Table IB, Note 5; Table IC, Note 2; and Table ID, Note 2.

(2) USEPA. 1978. Microbiological Methods for Monitoring the Environment, Water, and Wastes. Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, Cincinnati, Ohio. EPA/600/8–78/017. Available from: National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161, Publ. No. PB–290329/AS. Cost: $36.95. Table IA, Note 3.

(3) ''Methods for Chemical Analysis of Water and Wastes,'' U.S. Environmental Protection Agency, EPA–600/4–79–020, March 1979, or ''Methods for Chemical Analysis of Water and Wastes,'' U.S. Environmental Protection Agency, EPA–600/4–79–020, Revised March 1983. Available from: ORD Publications, CERI, U.S. Environmental

Protection Agency, Cincinnati, Ohio 45268, Table IB, Note 1.

(4) ''Methods for Benzidine, Chlorinated Organic Compounds, Pentachlorophenol and Pesticides in Water and Wastewater,'' U.S. Environmental Protection Agency, 1978. Available from: ORD Publications, CERI, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268, Table IC, Note 3; Table D, Note 3.

(5) ''Prescribed Procedures for Measurement of Radioactivity in Drinking Water,'' U.S. Environmental Protection Agency, EPA–600/4–80–032, 1980. Available from: ORD Publications, CERI, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268, Table IE, Note 1.

(6) American Public Health Association. 1992, 1995, and 1998. Standard Methods for the Examination of Water and Wastewater. 18th, 19th, and 20th Edition (respectively). Available from: Amer. Publ. Hlth. Assoc., 1015 15th Street, NW., Washington, DC 20005. Table IA, Note 4. Tables IB, IC, ID, IE.

(7) Ibid, 15th Edition, 1980. Table IB, Note 30; Table ID.

(8) Ibid, 14th Edition, 1975. Table IB, Notes 17 and 27.

(9) ''Selected Analytical Methods Approved and Cited by the United States Environmental Protection Agency,'' Supplement to the 15th Edition of Standard Methods for the Examination of Water and Wastewater, 1981. Available from: American Public Health Association, 1015 Fifteenth Street NW., Washington, DC 20036. Cost available from publisher. Table IB, Note 10; Table IC, Note 6; Table ID, Note 6.

(10) Annual Book of ASTM Standards, Water, and Environmental Technology, Section 11, Volumes 11.01 and 11.02, 1994, 1996, and 1999. Available from: ASTM International, 100 Barr Harbor Drive, P.O. Box C–700, West Conshohocken, PA 19428–2959. Tables IB, IC, ID, and IE.

(11) USGS. 1989. U.S. Geological Survey Techniques of Water-Resources Investigations, Book 5, Laboratory Analysis, Chapter A4, Methods for Collection and Analysis of Aquatic Biological and Microbiological Samples, U.S. Geological Survey, U.S. Department of the Interior, Reston, Virginia. Available from: USGS Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225. Cost: $18.00. Table IA, Note 5.

(12) ''Methods for Determination of Inorganic Substances in Water and Fluvial Sediments,'' by M.J. Fishman and Linda C. Friedman, Techniques of Water-Resources Investigations of the U.S. Geological Survey, Book 5 Chapter A1 (1989). Available from: U.S. Geological Survey, Denver Federal Center, Box 25425, Denver, CO 80225. Cost: $108.75 (subject to change). Table IB, Note 2.

(13) ''Methods for Determination of Inorganic Substances in Water and Fluvial Sediments,'' N.W. Skougstad and others, editors. Techniques of Water-Resources Investigations of the U.S. Geological Survey, Book 5, Chapter A1 (1979). Available from: U.S. Geological Survey, Denver Federal Center, Box 25425, Denver, CO 80225. Cost: $10.00 (subject to change), Table IB, Note 8.

(14) ''Methods for the Determination of Organic Substances in Water and Fluvial Sediments,'' Wershaw, R.L., et al, Techniques of Water-Resources Investigations of the U.S. Geological Survey, Book 5, Chapter A3 (1987). Available from: U.S. Geological Survey, Denver Federal Center, Box 25425, Denver, CO 80225. Cost: $0.90 (subject to change). Table IB, Note 24; Table ID, Note 4.

(15) ''Water Temperature—Influential Factors, Field Measurement and Data Presentation,'' by H.H. Stevens, Jr., J. Ficke, and G.F. Smoot, Techniques of Water-Resources Investigations of the U.S. Geological Survey, Book 1, Chapter D1, 1975. Available from: U.S. Geological Survey, Denver Federal Center, Box 25425, Denver, CO 80225. Cost: $1.60 (subject to change). Table IB, Note 32.

(16) ''Selected Methods of the U.S. Geological Survey of Analysis of Wastewaters,'' by M.J. Fishman and Eugene Brown; U.S. Geological Survey Open File Report 76–77 (1976). Available from: U.S. Geological Survey, Branch of Distribution, 1200 South Eads Street, Arlington, VA 22202. Cost: $13.50 (subject to change). Table IE, Note 2.

(17) ''Official Methods of Analysis of the Association of Official Analytical Chemicals'', Methods manual, 15th Edition (1990). Price: $240.00. Available

from: The Association of Official Analytical Chemists, 2200 Wilson Boulevard, Suite 400, Arlington, VA 22201. Table IB, Note 3.

(18) ''American National Standard on Photographic Processing Effluents,'' April 2, 1975. Available from: American National Standards Institute, 1430 Broadway, New York, New York 10018. Table IB, Note 9.

(19) ''An Investigation of Improved Procedures for Measurement of Mill Effluent and Receiving Water Color,'' NCASI Technical Bulletin No. 253, December 1971. Available from: National Council of the Paper Industry for Air and Stream Improvements, Inc., 260 Madison Avenue, New York, NY 10016. Cost available from publisher. Table IB, Note 18.

(20) Ammonia, Automated Electrode Method, Industrial Method Number 379–75WE, dated February 19, 1976. Technicon Auto Analyzer II. Method and price available from Technicon Industrial Systems, Tarrytown, New York 10591. Table IB, Note 7.

(21) Chemical Oxygen Demand, Method 8000, Hach Handbook of Water Analysis, 1979. Method price available from Hach Chemical Company, P.O. Box 389, Loveland, Colorado 80537. Table IB, Note 14.

(22) OIC Chemical Oxygen Demand Method, 1978. Method and price available from Oceanography International Corporation, 512 West Loop, P.O. Box 2980, College Station, Texas 77840. Table IB, Note 13.

(23) ORION Research Instruction Manual, Residual Chlorine Electrode Model 97–70, 1977. Method and price available from ORION Research Incorporation, 840 Memorial Drive, Cambridge, Massachusetts 02138. Table IB, Note 16.

(24) Bicinchoninate Method for Copper. Method 8506, Hach Handbook of Water Analysis, 1979, Method and price available from Hach Chemical Company, P.O. Box 300, Loveland, Colorado 80537. Table IB, Note 19.

(25) Hydrogen Ion (pH) Automated Electrode Method, Industrial Method Number 378–75WA. October 1976. Bran & Luebbe (Technicon) Auto Analyzer II. Method and price available from Bran & Luebbe Analyzing Technologies, Inc. Elmsford, N.Y. 10523. Table IB, Note 21.

(26) 1,10-Phenanthroline Method using FerroVer Iron Reagent for Water, Hach Method 8008, 1980. Method and price available from Hach Chemical Company, P.O. Box 389 Loveland, Colorado 80537. Table IB, Note 22.

(27) Periodate Oxidation Method for Manganese, Method 8034, Hach Handbook for Water Analysis, 1979. Method and price available from Hach Chemical Company, P.O. Box 389, Loveland, Colorado 80537. Table IB, Note 23.

(28) Nitrogen, Nitrite—Low Range, Diazotization Method for Water and Wastewater, Hach Method 8507, 1979. Method and price available from Hach Chemical Company, P.O. Box 389, Loveland, Colorado 80537. Table IB, Note 25.

(29) Zincon Method for Zinc, Method 8009. Hach Handbook for Water Analysis, 1979. Method and price available from Hach Chemical Company, P.O. Box 389, Loveland, Colorado 80537. Table IB, Note 33.

(30) ''Direct Determination of Elemental Phosphorus by Gas-Liquid Chromatography,'' by R.F. Addison and R.G. Ackman, Journal of Chromatography, Volume 47, No. 3, pp. 421–426, 1970. Available in most public libraries. Back volumes of the Journal of Chromatography are available from Elsevier/North-Holland, Inc., Journal Information Centre, 52 Vanderbilt Avenue, New York, NY 10164. Cost available from publisher. Table IB, Note 28.

(31) ''Direct Current Plasma (DCP) Optical Emission Spectrometric Method for Trace Elemental Analysis of Water and Wastes'', Method AES 0029, 1986-Revised 1991, Fison Instruments, Inc., 32 Commerce Center, Cherry Hill Drive, Danvers, MA 01923. Table B, Note 34.

(32) ''Closed Vessel Microwave Digestion of Wastewater Samples for Determination of Metals, CEM Corporation, P.O. Box 200, Matthews, North Carolina 28106–0200, April 16, 1992. Available from the CEM Corporation. Table IB, Note 36.

(33) ''Organochlorine Pesticides and PCBs in Wastewater Using Empore ™ Disk'' Test Method 3M 0222, Revised 10/28/94. 3M Corporation, 3M Center Building 220–9E–10, St. Paul, MN 55144–1000. Method available from 3M Corporation. Table IC, Note 8 and Table ID, Note 8.

(34) USEPA. October 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. Fifth Edition. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA 821–R–02–012. Available from: National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161, Publ. No. PB2002–108488. Table IA, Note 7.

(35) ''Nitrogen, Total Kjeldahl, Method PAI–DK01 (Block Digestion, Steam Distillation, Titrimetric Detection)'', revised 12/22/94. Available from Perstorp Analytical Corporation, 9445 SW Ridder Rd., Suite 310, P.O. Box 648, Wilsonville, OK 97070. Table IB, Note 39.

(36) ''Nitrogen, Total Kjeldahl, Method PAI–DK02 (Block Digestion, Steam Distillation, Colorimetric Detection)'', revised 12/22/94. Available from Perstorp Analytical Corporation, 9445 SW Ridder Rd., Suite 310, P.O. Box 648, Wilsonville, OK 97070. Table IB, Note 40.

(37) ''Nitrogen, Total Kjeldahl, Method PAI–DK03 (Block Digestion, Automated FIA Gas Diffusion)'', revised 12/22/94. Available from Perstorp Analytical Corporation, 9445 SW Ridder Rd., Suite 310, P.O. Box 648, Wilsonville, OK 97070. Table IB, Note 41.

(38) USEPA. October 2002. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Fourth Edition. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA 821–R–02–013. Available from: National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161, Publ. No. PB2002–108489. Table IA, Note 8.

(39) USEPA. October 2002. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms. Third Edition. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA 821–R–02–014. Available from: National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161, Publ. No. PB2002–108490. Table IA, Note 9.

(40) EPA Methods 1666, 1667, and 1671 listed in the table above are published in the compendium titled Analytical Methods for the Determination of Pollutants in Pharmaceutical Manufacturing Industry Wastewaters (EPA 821–B–98–016). EPA Methods 502.2 and 524.2 have been incorporated by reference into 40 CFR 141.24 and are in Methods for the Determination of Organic Compounds in Drinking Water, EPA–600/4–88–039, December 1988, Revised, July 1991, and Methods for the Determination of Organic Compounds in Drinking Water-Supplement II, EPA–600/R–92–129, August 1992, respectively. These EPA test method compendia are available from the National Technical Information Service, NTIS PB91–231480 and PB92–207703, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The toll-free number is 800–553–6847. ASTM test methods D3371, D3695, and D4763 are available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428–2959.

(41) USEPA. 2002. Method 1631, Revision E, ''Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry.'' September 2002. Office of Water, U.S. Environmental Protection Agency (EPA–821–R–02–019). Available from: National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161. Publication No. PB2002–108220. Cost: $25.50 (subject to change).

(42) [Reserved]

(43) Method OIA–1677, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry. August 1999. ALPKEM, OI Analytical, Box 648, Wilsonville, Oregon 97070 (EPA–821–R–99–013). Available from: National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161. Publication No. PB99–132011. Cost: $22.50. Table IB, Note 44.

(44) ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory Determination of Ammonium Plus Organic Nitrogen by a Kjeldahl Digestion Method and an Automated Photometric Finish that Includes Digest Cleanup by Gas Diffusion'', Open File Report (OFR) 00–170. Available from: U.S. Geological Survey, Denver Federal Center, Box 25425, Denver, CO 80225. Table IB, Note 45.

(45) ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Chromium in Water by Graphite Furnace Atomic Absorption Spectrophotometry'', Open File Report (OFR) 93–449. Available from: U.S. Geological Survey, Denver Federal Center, Box 25425, Denver, CO 80225. Table IB, Note 46.

(46) ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Molybdenum in Water by Graphite Furnace Atomic Absorption Spectrophotometry'', Open File Report (OFR) 97–198. Available from: U.S. Geological Survey, Denver Federal Center, Box 25425, Denver, CO 80225. Table IB, Note 47.

(47) ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Total Phosphorus by Kjeldahl Digestion Method and an Automated Colorimetric Finish That Includes Dialysis'' Open File Report (OFR) 92–146. Available from: U.S. Geological Survey, Denver Federal Center, Box 25425, Denver, CO 80225. Table IB, Note 48.

(48) ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Arsenic and Selenium in Water and Sediment by Graphite Furnace—Atomic Absorption Spectrometry'' Open File Report (OFR) 98–639. Table IB, Note 49.

(49) ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Elements in Whole-Water Digests Using Inductively Coupled Plasma-Optical Emission Spectrometry and Inductively Coupled Plasma-Mass Spectrometry'' , Open File Report (OFR) 98–165. Available from: U.S. Geological Survey, Denver Federal Center, Box 25425, Denver, CO 80225. Table IB, Note 50.

(50) ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Triazine and Other Nitrogen-containing Compounds by Gas Chromatography with Nitrogen Phosphorus Detectors'' U.S.Geological Survey Open File Report 94–37. Available from: U.S. Geological Survey, Denver Federal Center, Box 25425, Denver, CO 80225. Table ID, Note 9.

(51) ''Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments'', Open File Report (OFR) 93–125. Available from: U.S. Geological Survey, Denver Federal Center, Box 25425, Denver, CO 80225. Table IB, Note 51; Table IC, Note 9.

(c) Under certain circumstances the Regional Administrator or the Director in the Region or State where the discharge will occur may determine for a particular discharge that additional parameters or pollutants must be reported. Under such circumstances, additional test procedures for analysis of pollutants may be specified by the Regional Administrator, or the Director upon the recommendation of the Director of the Environmental Monitoring Systems Laboratory—Cincinnati.

(d) Under certain circumstances, the Administrator may approve, upon recommendation by the Director, Environmental Monitoring Systems Laboratory—Cincinnati, additional alternate test procedures for nationwide use.

(e) Sample preservation procedures, container materials, and maximum allowable holding times for parameters cited in Tables IA, IB, IC, ID, and IE are prescribed in Table II. Any person may apply for a variance from the prescribed preservation techniques, container materials, and maximum holding times applicable to samples taken from a specific discharge. Applications for variances may be made by letters to the Regional Administrator in the Region in which the discharge will occur. Sufficient data should be provided to assure such variance does not adversely affect the integrity of the sample. Such data will be forwarded, by the Regional Administrator, to the Director of the Environmental Monitoring Systems Laboratory—Cincinnati, Ohio for technical review and recommendations for action on the variance application. Upon receipt of the recommendations from the Director of the Environmental Monitoring

Systems Laboratory, the Regional Administrator may grant a variance applicable to the specific charge to the applicant. A decision to approve or deny a variance will be made within 90 days of receipt of the application by the Regional Administrator.

TABLE II—REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES

Parameter No./name	Container [1]	Preservation [2, 3]	Maximum holding time [4]
Table IA—Bacteria Tests:			
1–4 Coliform, fecal and total	P,G	Cool, 4C, 0.008% $Na_2S_2O_3$ [5]	6 hours.
5 Fecal streptococci	P,G	Cool, 4C, 0.008% $Na_2S_2O_3$ [5]	6 hours.
Table IA—Aquatic Toxicity Tests:			
6–10 Toxicity, acute and chronic	P,G	Cool, 4 °C [16]	36 hours.
Table IB—Inorganic Tests:			
1. Acidity	P, G	Cool, 4°C	14 days.
2. Alkalinity	P, G	....do	Do.
4. Ammonia	P, G	Cool, 4°C, H_2SO_4 to pH<2	28 days.
9. Biochemical oxygen demand	P, G	Cool, 4°C	48 hours.
10. Boron	P, PFTE, or Quartz.	HNO_3 TO pH<2	6 months.
11. Bromide	P, G	None required	28 days.
14. Biochemical oxygen demand, carbonaceous	P, G	Cool, 4°C	48 hours.
15. Chemical oxygen demand	P, G	Cool, 4°C, H_2SO_4 to pH<2	28 days.
16. Chloride	P, G	None required	Do.
17. Chlorine, total residual	P, G	....do	Analyze immediately.
21. Color	P, G	Cool, 4°C	48 hours.
23–24. Cyanide, total and amenable to chlorination.	P, G	Cool, 4°C, NaOH to pH>12, 0.6g ascorbic acid [5].	14 days.[6]
25. Fluoride	P	None required	28 days.
27. Hardness	P, G	HNO_3 to pH<2, H_2SO_4 to pH<2	6 months.
28. Hydrogen ion (pH)	P, G	None required	Analyze immediately.
31, 43. Kjeldahl and organic nitrogen	P, G	Cool, 4°C, H_2SO_4 to pH<2	28 days.
Metals:[7]			
18. Chromium VI [7]	P, G	Cool, 4 °C	24 hours.
35. Mercury [17]	P, G	HNO_3 to pH<2	28 days.
3, 5–8, 12,13, 19, 20, 22, 26, 29, 30, 32–34, 36, 37, 45, 47, 51, 52, 58–60, 62, 63, 70–72, 74, 75. Metals except boron, chromium VI and mercury [7].	P, G	do	6 months.
38. Nitrate	P, G	Cool, 4°C	48 hours.
39. Nitrate-nitrite	P, G	Cool, 4°C, H_2SO_4 to pH<2	28 days.
40. Nitrite	P, G	Cool, 4°C	48 hours.
41. Oil and grease	G	Cool to 4°C, HCl or H_2SO_4 to pH<2.	28 days.
42. Organic Carbon	P, G	Cool to 4 °C HC1 or H_2SO4 or H_3PO4, to pH<2.	28 days.
44. Orthophosphate	P, G	Filter immediately, Cool, 4°C	48 hours.
46. Oxygen, Dissolved Probe	G Bottle and top.	None required	Analyze immediately.
47. Winkler	....do	Fix on site and store in dark	8 hours.
48. Phenols	G only	Cool, 4°C, H_2SO_4 to pH<2	28 days.
49. Phosphorus (elemental)	G	Cool, 4°C	48 hours.
50. Phosphorus, total	P, G	Cool, 4°C, H_2SO_4 to pH<2	28 days.
53. Residue, total	P, G	Cool, 4°C	7 days.
54. Residue, Filterable	P, G	....do	7 days.
55. Residue, Nonfilterable (TSS)	P, G	....do	7 days.
56. Residue, Settleable	P, G	....do	48 hours.
57. Residue, volatile	P, G	....do	7 days.
61. Silica	P, PFTE, or Quartz.	Cool, 4 °C	28 days.
64. Specific conductance	P, G	....do	Do.
65. Sulfate	P, G	....do	Do.
66. Sulfide	P, G	Cool, 4°C add zinc acetate plus sodium hydroxide to pH>9.	7 days.
67. Sulfite	P, G	None required	Analyze immediately.
68. Surfactants	P ,G	Cool, 4°C	48 hours.
69. Temperature	P, G	None required	Analyze.
73. Turbidity	P, G	Cool, 4°C	48 hours.
Table IC—Organic Tests [8]			
13, 18–20, 22, 24–28, 34–37, 39–43, 45–47, 56, 76, 104, 105, 108–111, 113. Purgeable Halocarbons.	G, Teflon-lined septum.	Cool, 4 °C, 0.008% $Na_2S_2O_3$ [5].	14 days.

TABLE II—REQUIRED CONTAINERS, PRESERVATION TECHNIQUES, AND HOLDING TIMES—Continued

Parameter No./name	Container [1]	Preservation [2, 3]	Maximum holding time [4]
6, 57, 106. Purgeable aromatic hydrocarbons	.....do	Cool, 4 °C, 0.008% $Na_2S_2O_3$,[5] HCl to pH2[9].	Do.
3, 4. Acrolein and acrylonitrile	.....do	Cool, 4 °C, 0.008% $Na_2S_2O_3$,[5] adjust pH to 4–5[10].	Do.
23, 30, 44, 49, 53, 77, 80, 81, 98, 100, 112. Phenols [11].	G, Teflon-lined cap..	Cool, 4 °C, 0.008% $Na_2S_2O_3$ [5]	7 days until extraction; 40 days after extraction.
7, 38. Benzidines [11]	.....do	.....do	7 days until extraction.[13]
14, 17, 48, 50–52. Phthalate esters [11]	.....do	Cool, 4 °C	7 days until extraction; 40 days after extraction.
82–84. Nitrosamines [11 14]	.....do	Cool, 4 °C, 0.008% $Na_2S_2O_3$,[5] store in dark.	Do.
88–94. PCBs [11]	.....do	Cool, 4 °C	Do.
54, 55, 75, 79. Nitroaromatics and isophorone [11]	.....do	Cool, 4 °C, 0.008% $Na_2S_2O_3$,[5] store in dark.	Do.
1, 2, 5, 8–12, 32, 33, 58, 59, 74, 78, 99, 101. Polynuclear aromatic hydrocarbons [11].	.....do	.....do	Do.
15, 16, 21, 31, 87. Haloethers [11]	.....do	Cool, 4 °C, 0.008% $Na_2S_2O_3$ [5]	Do.
29, 35–37, 63–65, 73, 107. Chlorinated hydrocarbons [11].	.....do	Cool, 4 °C	Do.
60–62, 66–72, 85, 86, 95–97, 102, 103. CDDs/CDFs [11].			
aqueous: field and lab preservation.	G	Cool, 0–4 °C, pH<9, 0.008% $Na_2S_2O_3$ [5].	1 year.
Solids, mixed phase, and tissue: field preservation..	.....do	Cool, <4 °C	7 days.
Solids, mixed phase, and tissue: lab preservation	.....do	Freeze, < −10 °C	1 year.
Table ID—Pesticides Tests:			
1–70. Pesticides [11]	.....do	Cool, 4°C, pH 5–9 [15]	Do.
Table IE—Radiological Tests:			
1–5. Alpha, beta and radium	P, G	HNO_3 to pH<2	6 months.

Table II Notes

[1] Polyethylene (P) or glass (G). For microbiology, plastic sample containers must be made of sterilizable materials (polypropylene or other autoclavable plastic).

[2] Sample preservation should be performed immediately upon sample collection. For composite chemical samples each aliquot should be preserved at the time of collection. When use of an automated sampler makes it impossible to preserve each aliquot, then chemical samples may be preserved by maintaining at 4°C until compositing and sample splitting is completed.

[3] When any sample is to be shipped by common carrier or sent through the United States Mails, it must comply with the Department of Transportation Hazardous Materials Regulations (49 CFR part 172). The person offering such material for transportation is responsible for ensuring such compliance. For the preservation requirements of Table II, the Office of Hazardous Materials, Materials Transportation Bureau, Department of Transportation has determined that the Hazardous Materials Regulations do not apply to the following materials: Hydrochloric acid (HCl) in water solutions at concentrations of 0.04% by weight or less (pH about 1.96 or greater); Nitric acid (HNO_3) in water solutions at concentrations of 0.15% by weight or less (pH about 1.62 or greater); Sulfuric acid (H_2SO_4) in water solutions at concentrations of 0.35% by weight or less (pH about 1.15 or greater); and Sodium hydroxide (NaOH) in water solutions at concentrations of 0.080% by weight or less (pH about 12.30 or less).

[4] Samples should be analyzed as soon as possible after collection. The times listed are the maximum times that samples may be held before analysis and still be considered valid. Samples may be held for longer periods only if the permittee, or monitoring laboratory, has data on file to show that for the specific types of samples under study, the analytes are stable for the longer time, and has received a variance from the Regional Administrator under § 136.3(e). Some samples may not be stable for the maximum time period given in the table. A permittee, or monitoring laboratory, is obligated to hold the sample for a shorter time if knowledge exists to show that this is necessary to maintain sample stability. See § 136.3(e) for details. The term ''analyze immediately'' usually means within 15 minutes or less of sample collection.

[5] Should only be used in the presence of residual chlorine.

[6] Maximum holding time is 24 hours when sulfide is present. Optionally all samples may be tested with lead acetate paper before pH adjustments in order to determine if sulfide is present. If sulfide is present, it can be removed by the addition of cadmium nitrate powder until a negative spot test is obtained. The sample is filtered and then NaOH is added to pH 12.

[7] Samples should be filtered immediately on-site before adding preservative for dissolved metals.

[8] Guidance applies to samples to be analyzed by GC, LC, or GC/MS for specific compounds.

[9] Sample receiving no pH adjustment must be analyzed within seven days of sampling.

[10] The pH adjustment is not required if acrolein will not be measured. Samples for acrolein receiving no pH adjustment must be analyzed within 3 days of sampling.

[11] When the extractable analytes of concern fall within a single chemical category, the specified preservative and maximum holding times should be observed for optimum safeguard of sample integrity. When the analytes of concern fall within two or more chemical categories, the sample may be preserved by cooling to 4°C, reducing residual chlorine with 0.008% sodium thiosulfate, storing in the dark, and adjusting the pH to 6–9; samples preserved in this manner may be held for seven days before extraction and for forty days after extraction. Exceptions to this optional preservation and holding time procedure are noted in footnote 5 (re the requirement for thiosulfate reduction of residual chlorine), and footnotes 12, 13 (re the analysis of benzidine).

[12] If 1,2-diphenylhydrazine is likely to be present, adjust the pH of the sample to 4.0±0.2 to prevent rearrangement to benzidine.

[13] Extracts may be stored up to 7 days before analysis if storage is conducted under an inert (oxidant-free) atmosphere.

[14] For the analysis of diphenylnitrosamine, add 0.008% $Na_2S_2O_3$ and adjust pH to 7–10 with NaOH within 24 hours of sampling.

[15] The pH adjustment may be performed upon receipt at the laboratory and may be omitted if the samples are extracted within 72 hours of collection. For the analysis of aldrin, add 0.008% $Na_2S_2O_3$.

[16] Sufficient ice should be placed with the samples in the shipping container to ensure that ice is still present when the samples arrive at the laboratory. However, even if ice is present when the samples arrive, it is necessary to immediately measure the temperature of the samples and confirm that the 4C temperature maximum has not been exceeded. In the isolated cases where it can be documented that this holding temperature can not be met, the permittee can be given the option of on-site testing or can request a variance. The request for a variance should include supportive data which show that the toxicity of the effluent samples is not reduced because of the increased holding temperature.

[17] Samples collected for the determination of trace level mercury (100 ng/L) using EPA Method 1631 must be collected in tightly-capped fluoropolymer or glass bottles and preserved with BrCl or HCl solution within 48 hours of sample collection. The time to preservation may be extended to 28 days if a sample is oxidized in the sample bottle. Samples collected for dissolved trace level mercury should be filtered in the laboratory. However, if circumstances prevent overnight shipment, samples should be filtered in a designated clean area in the field in accordance with procedures given in Method 1669. Samples that have been collected for determination of total or dissolved trace level mercury must be analyzed within 90 days of sample collection.

[38 FR 28758, Oct. 16, 1973, as amended at 41 FR 52781, Dec. 1, 1976; 49 FR 43251, 43258, 43259, Oct. 26, 1984; 50 FR 691, 692, 695, Jan. 4, 1985; 51 FR 23693, June 30, 1986; 52 FR 33543, Sept. 3, 1987; 55 FR 24534, June 15, 1990; 55 FR 33440, Aug. 15, 1990; 56 FR 50759, Oct. 8, 1991; 57 FR 41833, Sept. 11, 1992; 58 FR 4505, Jan. 31, 1994; 60 FR 17160, Apr. 4, 1995; 60 FR 39588, 39590, Aug. 2, 1995; 60 FR 44672, Aug. 28, 1995; 60 FR 53542, 53543, Oct. 16, 1995; 62 FR 48403, 48404, Sept. 15, 1997; 63 FR 50423, Sept. 21, 1998; 64 FR 4978, Feb. 2, 1999; 64 FR 10392, Mar. 4, 1999; 64 FR 26327, May 14, 1999; 64 FR 30433, 30434, June 8, 1999; 64 FR 73423, Dec. 30, 1999; 66 FR 32776, June 18, 2001; 67 FR 65226, Oct. 23, 2002; 67 FR 65886, Oct. 29, 2002; 67 FR 69971, Nov. 19, 2002]

§ 136.4 Application for alternate test procedures.

(a) Any person may apply to the Regional Administrator in the Region where the discharge occurs for approval of an alternative test procedure.

(b) When the discharge for which an alternative test procedure is proposed occurs within a State having a permit program approved pursuant to section 402 of the Act, the applicant shall submit his application to the Regional Administrator through the Director of the State agency having responsibility for issuance of NPDES permits within such State.

(c) Unless and until printed application forms are made available, an application for an alternate test procedure may be made by letter in triplicate. Any application for an alternate test procedure under this paragraph (c) shall:

(1) Provide the name and address of the responsible person or firm making the discharge (if not the applicant) and the applicable ID number of the existing or pending permit, issuing agency, and type of permit for which the alternate test procedure is requested, and the discharge serial number.

(2) Identify the pollutant or parameter for which approval of an alternate testing procedure is being requested.

(3) Provide justification for using testing procedures other than those specified in Table I.

(4) Provide a detailed description of the proposed alternate test procedure, together with references to published studies of the applicability of the alternate test procedure to the effluents in question.

(d) An application for approval of an alternate test procedure for nationwide use may be made by letter in triplicate to the Director, Analytical Methods Staff, Office of Science and Technology (4303), Office of Water, U.S. Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460. Any application for an alternate test procedure under this paragraph (d) shall:

(1) Provide the name and address of the responsible person or firm making the application.

(2) Identify the pollutant(s) or parameter(s) for which nationwide approval of an alternate testing procedure is being requested.

(3) Provide a detailed description of the proposed alternate procedure, together with references to published or other studies confirming the general applicability of the alternate test procedure to the pollutant(s) or parameter(s) in waste water discharges from representative and specified industrial or other categories.

(4) Provide comparability data for the performance of the proposed alternate test procedure compared to the performance of the approved test procedures.

[38 FR 28760, Oct. 16, 1973, as amended at 41 FR 52785, Dec. 1, 1976; 62 FR 30763, June 5, 1997]

§ 136.5 Approval of alternate test procedures.

(a) The Regional Administrator of the region in which the discharge will occur has final responsibility for approval of any alternate test procedure proposed by the responsible person or firm making the discharge.

(b) Within thirty days of receipt of an application, the Director will forward such application proposed by the responsible person or firm making the discharge, together with his recommendations, to the Regional Administrator. Where the Director recommends rejection of the application for scientific and technical reasons which he provides, the Regional Administrator shall deny the application, and shall forward a copy of the rejected application and his decision to the Director of the State Permit Program and to the Director of the Analytical Methods Staff, Washington, DC.

(c) Before approving any application for an alternate test procedure proposed by the responsible person or firm making the discharge, the Regional Administrator shall forward a copy of the application to the Director of the Analytical Methods Staff, Washington, DC.

(d) Within ninety days of receipt by the Regional Administrator of an application for an alternate test procedure, proposed by the responsible person or firm making the discharge, the Regional Administrator shall notify the applicant and the appropriate State agency of approval or rejection, or shall specify the additional information which is required to determine whether to approve the proposed test procedure. Prior to the expiration of such ninety day period, a recommendation providing the scientific and other technical basis for acceptance or rejection will be forwarded to the Regional Administrator by the Director of the Analytical Methods Staff, Washington, DC. A copy of all approval and rejection notifications will be forwarded to the Director, Analytical Methods Staff, Washington, DC, for the purposes of national coordination.

(e) *Approval for nationwide use.* (1) Within sixty days of the receipt by the Director of the Analytical Methods Staff, Washington, DC, of an application for an alternate test procedure for nationwide use, the Director of the Analytical Methods Staff shall notify the applicant in writing whether the application is complete. If the application is incomplete, the applicant shall be informed of the information necessary to make the application complete.

(2) Within ninety days of the receipt of a complete package, the Analytical Methods Staff shall perform any analysis necessary to determine whether the alternate method satisfies the applicable requirements of this part, and the Director of the Analytical Methods Staff shall recommend to the Administrator that he/she approve or reject the application and shall also notify the applicant of such recommendation.

(3) As expeditiously as practicable, an alternate method determined by the Administrator to satisfy the applicable requirements of this part shall be proposed by EPA for incorporation in subsection 136.3 of 40 CFR part 136. EPA shall make available for review all the factual bases for its proposal, including any performance data submitted by the applicant and any available EPA analysis of those data.

(4) Following a period of public comment, EPA shall, as expeditiously as practicable, publish in the FEDERAL REGISTER a final decision to approve or reject the alternate method.

[38 FR 28760, Oct. 16, 1973, as amended at 41 FR 52785, Dec. 1, 1976; 55 FR 33440, Aug. 15, 1990; 62 FR 30763, June 5, 1997]

APPENDIX A TO PART 136—METHODS FOR ORGANIC CHEMICAL ANALYSIS OF MUNICIPAL AND INDUSTRIAL WASTEWATER

METHOD 601—PURGEABLE HALOCARBONS

1. Scope and Application

1.1 This method covers the determination of 29 purgeable halocarbons.

The following parameters may be determined by this method:

Parameter	STORET No.	CAS No.
Bromodichloromethane	32101	75–27–4
Bromoform	32104	75–25–2
Bromomethane	34413	74–83–9
Carbon tetrachloride	32102	56–23–5
Chlorobenzene	34301	108–90–7
Chloroethane	34311	75–00–3
2-Chloroethylvinyl ether	34576	100–75–8
Chloroform	32106	67–66–3

RCW 90.48.010

Policy enunciated.

It is declared to be the public policy of the state of Washington to maintain the highest possible standards to insure the purity of all waters of the state consistent with public health and public enjoyment thereof, the propagation and protection of wild life, birds, game, fish and other aquatic life, and the industrial development of the state, and to that end require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the state of Washington. Consistent with this policy, the state of Washington will exercise its powers, as fully and as effectively as possible, to retain and secure high quality for all waters of the state. The state of Washington in recognition of the federal government's interest in the quality of the navigable waters of the United States, of which certain portions thereof are within the jurisdictional limits of this state, proclaims a public policy of working cooperatively with the federal government in a joint effort to extinguish the sources of water quality degradation, while at the same time preserving and vigorously exercising state powers to insure that present and future standards of water quality within the state shall be determined by the citizenry, through and by the efforts of state government, of the state of Washington.

[**1973 c 155 § 1; 1945 c 216 § 1;** Rem. Supp. 1945 § 10964a.]

RCW 90.48.520

Review of operations before issuance or renewal of wastewater discharge permits—Incorporation of permit conditions.

In order to improve water quality by controlling toxicants in wastewater, the department of ecology shall in issuing and renewing state and federal wastewater discharge permits review the applicant's operations and incorporate permit conditions which require all known, available, and reasonable methods to control toxicants in the applicant's wastewater. Such conditions may include, but are not limited to: (1) Limits on the discharge of specific chemicals, and (2) limits on the overall toxicity of the effluent. The toxicity of the effluent shall be determined by techniques such as chronic or acute bioassays. Such conditions shall be required regardless of the quality of receiving water and regardless of the minimum water quality standards. In no event shall the discharge of toxicants be allowed that would violate any water quality standard, including toxicant standards, sediment criteria, and dilution zone criteria.

[**1987 c 500 § 1.**]

WAC 173-201A-240

Toxic substances.

(1) Toxic substances shall not be introduced above natural background levels in waters of the state which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the department.

(2) The department shall employ or require chemical testing, acute and chronic toxicity testing, and biological assessments, as appropriate, to evaluate compliance with subsection (1) of this section and to ensure that aquatic communities and the existing and designated uses of waters are being fully protected.

(3) USEPA Quality Criteria for Water, 1986, as revised, shall be used in the use and interpretation of the values listed in subsection (5) of this section.

(4) Concentrations of toxic, and other substances with toxic propensities not listed in Table 240 of this section shall be determined in consideration of USEPA Quality Criteria for Water, 1986, and as revised, and other relevant information as appropriate.

(5) The following criteria, found in Table 240, shall be applied to all surface waters of the state of Washington. Values are µg/L for all substances except ammonia and chloride which are mg/L, and asbestos which is million fibers/L. The department shall formally adopt any appropriate revised criteria as part of this chapter in accordance with the provisions established in chapter **34.05** RCW, the Administrative Procedure Act. The department shall ensure there are early opportunities for public review and comment on proposals to develop revised criteria.

(a) **Aquatic life protection**. The department may revise the criteria in Table 240 for aquatic life on a statewide or water body-specific basis as needed to protect aquatic life occurring in waters of the state and to increase the technical accuracy of the criteria being applied. The department shall formally adopt any appropriate revised criteria as part of this chapter in accordance with the provisions established in chapter **34.05** RCW, the Administrative Procedure Act.

(b) **Human health protection.** The following provisions apply to the human health criteria in Table 240. All waters shall maintain a level of water quality when entering downstream waters that provides for the attainment and maintenance of the water quality standards of those downstream waters, including the waters of another state. The human health criteria in the tables were calculated using a fish consumption rate of 175 g/day. Criteria for carcinogenic substances were calculated using a cancer risk level equal to one-in-one-million, or as otherwise specified in this chapter. The human health criteria calculations and variables include chronic durations of exposure up to seventy years. All human health criteria for metals are for total metal concentrations, unless otherwise noted. Dischargers have the obligation to reduce toxics in discharges through the use of AKART.

Table 240
Toxics Substances Criteria

Compound/Chemical	Chemical Abstracts Service (CAS)#	Category	Aquatic Life Criteria - Freshwater		Aquatic Life Criteria - Marine Water		Human Health Criteria for Consumption of:	
			Acute	Chronic	Acute	Chronic	Water & Organisms	Organisms Only
Metals:								
Antimony	7440360	Metals, cyanide, and total phenols	-	-	-	-	12	180
Arsenic	7440382	Metals, cyanide, and total phenols	360.0 (c,dd)	190.0 (d,dd)	69.0 (c,ll,dd)	36.0 (d,cc,ll,dd)	10 (A)	10 (A)
Asbestos	1332214	Toxic pollutants and hazardous substances	-	-	-	-	7,000,000 fibers/L (C)	-
Beryllium	7440417	Metals, cyanide, and total phenols	-	-	-	-	-	-
Cadmium	7440439	Metals, cyanide, and total phenols	(i,c,dd)	(j,d,dd)	42.0 (c,dd)	9.3 (d,dd)	-	-
Chromium (III)	16065831	Metals, cyanide, and total phenols	(m,c,gg)	(n,d,gg)	-	-	-	-
Chromium (VI)	18540299	Metals, cyanide, and total phenols	15.0 (c,l,ii,dd)	10.0 (d,jj,dd)	1,100.0 (c,l,ll,dd)	50.0 (d,ll,dd)	-	-
Copper	7440508	Metals, cyanide, and total phenols	(o,c,dd)	(p,d,dd)	4.8 (c,ll,dd)	3.1 (d,ll,dd)	1,300 (C)	-

Appendix p. A-145

Compound/Chemical	Chemical Abstracts Service (CAS)#	Category	Aquatic Life Criteria - Freshwater		Aquatic Life Criteria - Marine Water		Human Health Criteria for Consumption of:	
			Acute	Chronic	Acute	Chronic	Water & Organisms	Organisms Only
Lead	7439921	Metals, cyanide, and total phenols	(q,c,dd)	(r,d,dd)	210.0 (c,ll,dd)	8.1 (d,ll,dd)	-	-
Mercury	7439976	Metals, cyanide, and total phenols	2.1 (c,kk,dd)	0.012 (d,ff,s)	1.8 (c,ll,dd)	0.025 (d,ff,s)	(G)	(G)
Methylmercury	22967926	Nonconventional	-	-	-	-	-	-
Nickel	7440020	Metals, cyanide, and total phenols	(t,c,dd)	(u,d,dd)	74.0 (c,ll,dd)	8.2 (d,ll,dd)	150	190
Selenium	7782492	Metals, cyanide, and total phenols	20.0 (c,ff)	5.0 (d,ff)	290 (c,ll,dd)	71.0 (d,x,ll,dd)	120	480
Silver	7440224	Metals, cyanide, and total phenols	(y,a,dd)	-	1.9 (a,ll,dd)	-	-	-
Thallium	7440280	Metals, cyanide, and total phenols	-	-	-	-	0.24	0.27
Zinc	7440666	Metals, cyanide, and total phenols	(aa,c,dd)	(bb,d,dd)	90.0 (c,ll,dd)	81.0 (d,ll,dd)	2,300	2,900
Other chemicals:								
1,1,1-Trichloroethane	71556	Volatile	-	-	-	-	47,000	160,000
1,1,2,2-Tetrachloroethane	79345	Volatile	-	-	-	-	0.12 (B)	0.46 (B)
1,1,2-Trichloroethane	79005	Volatile	-	-	-	-	0.44 (B)	1.8 (B)
1,1-Dichloroethane	75343	Volatile	-	-	-	-	-	-
1,1-Dichloroethylene	75354	Volatile	-	-	-	-	1200	4100
1,2,4-Trichlorobenzene	120821	Base/neutral compounds	-	-	-	-	0.12 (B)	0.14 (B)
1,2-Dichlorobenzene	95501	Volatile	-	-	-	-	2000	2500
1,2-Dichloroethane	107062	Volatile	-	-	-	-	9.3 (B)	120 (B)
1,2-Dichloropropane	78875	Volatile	-	-	-	-	0.71 (B)	3.1 (B)
1,3-Dichloropropene	542756	Volatile	-	-	-	-	0.24 (B)	2 (B)
1,2-Diphenylhydrazine	122667	Base/neutral compounds	-	-	-	-	0.015 (B)	0.023 (B)
1,2-Trans-Dichloroethylene	156605	Volatile	-	-	-	-	600	5,800
1,3-Dichlorobenzene	541731	Volatile	-	-	-	-	13	16
1,4-Dichlorobenzene	106467	Volatile	-	-	-	-	460	580
2,3,7,8-TCDD (Dioxin)	1746016	Dioxin	-	-	-	-	0.000000064	0.000000064
2,4,6-Trichlorophenol	88062	Acid compounds	-	-	-	-	0.25 (B)	0.28 (B)
2,4-Dichlorophenol	120832	Acid compounds	-	-	-	-	25	34
2,4-Dimethylphenol	105679	Acid compounds	-	-	-	-	85	97
2,4-Dinitrophenol	51285	Acid compounds	-	-	-	-	60	610
2,4-Dinitrotoluene	121142	Base/neutral compounds	-	-	-	-	0.039 (B)	0.18 (B)

Compound/Chemical	Chemical Abstracts Service (CAS)#	Category	Aquatic Life Criteria - Freshwater		Aquatic Life Criteria - Marine Water		Human Health Criteria for Consumption of:	
			Acute	Chronic	Acute	Chronic	Water & Organisms	Organisms Only
2,6-Dinitrotoluene	606202	Base/neutral compounds	-	-	-	-	-	-
2-Chloroethyvinyl Ether	110758	Volatile	-	-	-	-	-	-
2-Chloronaphthalene	91587	Base/neutral compounds	-	-	-	-	170	180
2-Chlorophenol	95578	Acid compounds	-	-	-	-	15	17
2-Methyl-4,6-Dinitrophenol (4,6-dinitro-o-cresol)	534521	Acid compounds	-	-	-	-	7.1	25
2-Nitrophenol	88755	Acid compounds	-	-	-	-	-	-
3,3'-Dichlorobenzidine	91941	Base/neutral compounds	-	-	-	-	0.0031 (B)	0.0033 (B)
3-Methyl-4-Chlorophenol (parachlorometa cresol)	59507	Acid compounds	-	-	-	-	36	36
4,4'-DDD	72548	Pesticides/PCBs	-	-	-	-	0.000036 (B)	0.000036 (B)
4,4'-DDE	72559	Pesticides/PCBs	-	-	-	-	0.000051 (B)	0.000051 (B)
4,4'-DDT	50293	Pesticides/PCBs	-	-	-	-	0.000025 (B)	0.000025 (B)
4,4'-DDT(and metabolites)		Pesticides/PCBs	1.1 (a)	0.001 (b)	0.13 (a)	0.001 (b)	-	-
4-Bromophenyl Phenyl Ether	101553	Base/neutral compounds	-	-	-	-	-	-
4-Chorophenyl Phenyl Ether	7005723	Base/neutral compounds	-	-	-	-	-	-
4-Nitrophenol	100027	Acid compounds	-	-	-	-	-	-
Acenaphthene	83329	Base/neutral compounds	-	-	-	-	110	110
Acenaphthylene	208968	Base/neutral compounds	-	-	-	-	-	-
Acrolein	107028	Volatile	-	-	-	-	1.0	1.1
Acrylonitrile	107131	Volatile	-	-	-	-	0.019 (B)	0.028 (B)
Aldrin	309002	Pesticides/PCBs	2.5 (a,e)	0.0019 (b,e)	0.71 (a,e)	0.0019 (b,e)	0.0000057 (B)	0.0000058 (B)
alpha-BHC	319846	Pesticides/PCBs	-	-	-	-	0.0005 (B)	0.00056 (B)
alpha-Endosulfan	959988	Pesticides/PCBs	-	-	-	-	9.7	10
Anthracene	120127	Base/neutral compounds	-	-	-	-	3,100	4,600
Benzene	71432	Volatile	-	-	-	-	0.44 (B)	1.6 (B)
Benzidine	92875	Base/neutral compounds	-	-	-	-	0.00002 (B)	0.000023 (B)
Benzo(a) Anthracene	56553	Base/neutral compounds	-	-	-	-	0.014 (B)	0.021 (B)
Benzo(a) Pyrene	50328	Base/neutral compounds	-	-	-	-	0.0014 (B)	0.0021 (B)
Benzo(b) Fluoranthene	205992	Base/neutral compounds	-	-	-	-	0.014 (B)	0.021 (B)
Benzo(ghi) Perylene	191242	Base/neutral compounds	-	-	-	-	-	-

Compound/Chemical	Chemical Abstracts Service (CAS)#	Category	Aquatic Life Criteria - Freshwater		Aquatic Life Criteria - Marine Water		Human Health Criteria for Consumption of:	
			Acute	Chronic	Acute	Chronic	Water & Organisms	Organisms Only
Benzo(k) Fluoranthene	207089	Base/neutral compounds	-	-	-	-	0.014 (B)	0.21 (B)
beta-BHC	319857	Pesticides/PCBs	-	-	-	-	0.0018 (B)	0.002 (B)
beta-Endosulfan	33213659	Pesticides/PCBs	-	-	-	-	9.7	10
Bis(2-Chloroethoxy) Methane	111911	Base/neutral compounds	-	-	-	-	-	-
Bis(2-Chloroethyl) Ether	111444	Base/neutral compounds	-	-	-	-	0.02 (B)	0.06 (B)
Bis(2-Chloroisopropyl) Ether	39638329	Base/neutral compounds	-	-	-	-	-	-
Bis(2-Ethylhexyl) Phthalate	117817	Base/neutral compounds	-	-	-	-	0.23 (B)	0.25 (B)
Bromoform	75252	Volatile	-	-	-	-	5.8 (B)	27 (B)
Butylbenzyl Phthalate	85687	Base/neutral compounds	-	-	-	-	0.56 (B)	0.58 (B)
Carbon Tetrachloride	56235	Volatile	-	-	-	-	0.2 (B)	0.35 (B)
Chlordane	57749	Pesticides/PCBs	2.4 (a)	0.0043 (b)	0.09 (a)	0.004 (b)	0.000093 (B)	0.000093 (B)
Chlorobenzene	108907	Volatile	-	-	-	-	380	890
Chlorodibromomethane	124481	Volatile	-	-	-	-	0.65 (B)	3 (B)
Chloroethane	75003	Volatile	-	-	-	-	-	-
Chloroform	67663	Volatile	-	-	-	-	260	1200
Chrysene	218019	Base/neutral compounds	-	-	-	-	1.4 (B)	2.1 (B)
Cyanide	57125	Metals, cyanide, and total phenols	22.0 (c,ee)	5.2 (d,ee)	1.0 (c,mm,ee)	(d,mm,ee)	19 (D)	270 (D)
delta-BHC	319868	Pesticides/PCBs	-	-	-	-	-	-
Dibenzo(a,h) Anthracene	53703	Base/neutral compounds	-	-	-	-	0.0014 (B)	0.0021 (B)
Dichlorobromomethane	75274	Volatile	-	-	-	-	0.77 (B)	3.6 (B)
Dieldrin	60571	Pesticides/PCBs	2.5 (a,e)	0.0019 (b,e)	0.71 (a,e)	0.0019 (b,e)	0.0000061 (B)	0.0000061 (B)
Diethyl Phthalate	84662	Base/neutral compounds	-	-	-	-	4,200	5,000
Dimethyl Phthalate	131113	Base/neutral compounds	-	-	-	-	92,000	130,000
Di-n-Butyl Phthalate	84742	Base/neutral compounds	-	-	-	-	450	510
Di-n-Octyl Phthalate	117840	Base/neutral compounds	-	-	-	-	-	-
Endosulfan		Pesticides/PCBs	0.22 (a)	0.056 (b)	0.034 (a)	0.0087 (b)	-	-
Endosulfan Sulfate	1031078	Pesticides/PCBs	-	-	-	-	9.7	10
Endrin	72208	Pesticides/PCBs	0.18 (a)	0.0023 (b)	0.037 (a)	0.0023 (b)	0.034	0.035
Endrin Aldehyde	7421934	Pesticides/PCBs	-	-	-	-	0.034	0.035

Appendix p. A-148

Compound/Chemical	Chemical Abstracts Service (CAS)#	Category	Aquatic Life Criteria - Freshwater		Aquatic Life Criteria - Marine Water		Human Health Criteria for Consumption of:	
			Acute	Chronic	Acute	Chronic	Water & Organisms	Organisms Only
Ethylbenzene	100414	Volatile	-	-	-	-	200	270
Fluoranthene	206440	Base/neutral compounds	-	-	-	-	16	16
Fluorene	86737	Base/neutral compounds	-	-	-	-	420	610
Hexachlorocyclohexane (gamma-BHC; Lindane)	58899	Pesticides/PCBs	2.0 (a)	0.08 (b)	0.16 (a)	-	15	17
Heptachlor	76448	Pesticides/PCBs	0.52 (a)	0.0038 (b)	0.053 (a)	0.0036 (b)	0.0000099 (B)	0.00001 (B)
Heptachlor Epoxide	1024573	Pesticides/PCBs	-	-	-	-	0.0000074 (B)	0.0000074 (B)
Hexachlorobenzene	118741	Base/neutral compounds	-	-	-	-	0.000051 (B)	0.000052 (B)
Hexachlorobutadiene	87683	Base/neutral compounds	-	-	-	-	0.69 (B)	4.1 (B)
Hexachlorocyclopentadiene	77474	Base/neutral compounds	-	-	-	-	150	630
Hexachloroethane	67721	Base/neutral compounds	-	-	-	-	0.11 (B)	0.13 (B)
Indeno(1,2,3-cd) Pyrene	193395	Base/neutral compounds	-	-	-	-	0.014 (B)	0.021 (B)
Isophorone	78591	Base/neutral compounds	-	-	-	-	27 (B)	110 (B)
Methyl Bromide	74839	Volatile	-	-	-	-	520	2,400
Methyl Chloride	74873	Volatile	-	-	-	-	-	-
Methylene Chloride	75092	Volatile	-	-	-	-	16 (B)	250 (B)
Napthalene	91203	Base/neutral compounds	-	-	-	-	-	-
Nitrobenzene	98953	Base/neutral compounds	-	-	-	-	55	320
N-Nitrosodimethylamine	62759	Base/neutral compounds	-	-	-	-	0.00065 (B)	0.34 (B)
N-Nitrosodi-n-Propylamine	621647	Base/neutral compounds	-	-	-	-	0.0044 (B)	0.058 (B)
N-Nitrosodiphenylamine	86306	Base/neutral compounds	-	-	-	-	0.62 (B)	0.69 (B)
Pentachlorophenol (PCP)	87865	Acid compounds	(w,c)	(v,d)	13.0 (c)	7.9 (d)	0.046 (B)	0.1 (B)
Phenanthrene	85018	Base/neutral compounds	-	-	-	-	-	-
Phenol	108952	Acid compounds	-	-	-	-	18,000	200,000
Polychlorinated Biphenyls (PCBs)		Pesticides/PCBs	2.0 (b)	0.014 (b)	10.0 (b)	0.030 (b)	0.00017 (E)	0.00017 (E)
Pyrene	129000	Base/neutral compounds	-	-	-	-	310	460
Tetrachloroethylene	127184	Volatile	-	-	-	-	4.9 (B)	7.1 (B)
Toluene	108883	Volatile	-	-	-	-	180	410
Toxaphene	8001352	Pesticides/PCBs	0.73 (c,z)	0.0002 (d)	0.21 (c,z)	0.0002 (d)	0.000032 (B)	0.000032 (B)

Compound/Chemical	Chemical Abstracts Service (CAS)#	Category	Aquatic Life Criteria - Freshwater		Aquatic Life Criteria - Marine Water		Human Health Criteria for Consumption of:	
			Acute	Chronic	Acute	Chronic	Water & Organisms	Organisms Only
Trichloroethylene	79016	Volatile	-	-	-	-	0.38 (B)	0.86 (B)
Vinyl Chloride	75014	Volatile	-	-	-	-	0.02 (B, F)	0.26 (B, F)
Ammonia (hh)		Nonconventional	(f,c)	(g,d)	0.233 (h,c)	0.035 (h,d)	-	-
Chloride (dissolved) (k)		Nonconventional	860.0 (h,c)	230.0 (h,d)	-	-	-	-
Chlorine (total residual)		Nonconventional	19.0 (c)	11.0 (d)	13.0 (c)	7.5 (d)	-	-
Chlorpyrifos		Toxic pollutants and hazardous substances	0.083 (c)	0.041 (d)	0.011 (c)	0.0056 (d)	-	-
Parathion		Toxic pollutants and hazardous substances	0.065 (c)	0.013 (d)	-	-	-	-

Footnotes for aquatic life criteria in Table 240:

a. An instantaneous concentration not to be exceeded at any time.
b. A 24-hour average not to be exceeded.
c. A 1-hour average concentration not to be exceeded more than once every three years on the average.
d. A 4-day average concentration not to be exceeded more than once every three years on the average.
e. Aldrin is metabolically converted to Dieldrin. Therefore, the sum of the Aldrin and Dieldrin concentrations are compared with the Dieldrin criteria.
f. Shall not exceed the numerical value in total ammonia nitrogen (mg N/L) given by:

For salmonids present:

$$\frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}}$$

For salmonids absent:

$$\frac{0.411}{1 + 10^{7.204 - pH}} + \frac{58.4}{1 + 10^{pH - 7.204}}$$

g. Shall not exceed the numerical concentration calculated as follows:
Unionized ammonia concentration for waters where salmonid habitat is an existing or designated use:

$$0.80 \div (FT)(FPH)(RATIO)$$

where: RATIO = $13.5; 7.7 \le pH \le 9$

RATIO = $(20.25 \times 10^{(7.7-pH)}) \div (1 + 10^{(7.4-pH)}); 6.5 \le pH \le 7.7$

FT = $1.4; 15 \le T \le 30$

FT = $10^{[0.03(20-T)]}; 0 \le T \le 15$

FPH = $1; 8 \le pH \le 9$

FPH = $(1 + 10^{(7.4-pH)}) \div 1.25; 6.5 \le pH \le 8.0$

Total ammonia concentrations for waters where salmonid habitat is not an existing or designated use and other fish early life stages are absent:

$$Chronic\ Criterion = \left(\frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}}\right) \times \left(1.45 \times 10^{0.028(25 - A)}\right)$$

where: A = the greater of either T (temperature in degrees Celsius) or 7.

Applied as a thirty-day average concentration of total ammonia nitrogen (in mg N/L) not to be exceeded more than once every three years on average. The highest four-day average within the thirty-day period should not exceed 2.5 times the chronic criterion.

Total ammonia concentration for waters where salmonid habitat is not an existing or designated use and other fish early life stages are present:

$$Chronic\ Criterion = \left(\frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}}\right) \times B$$

Appendix A-150

where: B = the lower of either 2.85, or $1.45 \times 10^{0.028 \times (25-T)}$. T = temperature in degrees Celsius.

Applied as a thirty-day average concentration of total ammonia nitrogen (in mg N/L) not to be exceeded more than once every three years on the average. The highest four-day average within the thirty-day period should not exceed 2.5 times the chronic criterion.

h. Measured in milligrams per liter rather than micrograms per liter.
i. ≤ (0.944)(e(1.128[ln(hardness)]-3.828)) at hardness = 100. Conversion factor (CF) of 0.944 is hardness dependent. CF is calculated for other hardnesses as follows: CF = 1.136672 - [(ln hardness)(0.041838)].
j. ≤ (0.909)(e(0.7852[ln(hardness)]-3.490)) at hardness = 100. Conversions factor (CF) of 0.909 is hardness dependent. CF is calculated for other hardnesses as follows: CF = 1.101672 - [(ln hardness)(0.041838)].
k. Criterion based on dissolved chloride in association with sodium. This criterion probably will not be adequately protective when the chloride is associated with potassium, calcium, or magnesium, rather than sodium.
l. Salinity dependent effects. At low salinity the 1-hour average may not be sufficiently protective.
m. ≤ $(0.316)(e^{(0.8190[\ln(\text{hardness})] + 3.688)})$
n. ≤ $(0.860)(e^{(0.8190[\ln(\text{hardness})] + 1.561)})$
o. ≤ $(0.960)(e^{(0.9422[\ln(\text{hardness})] - 1.464)})$
p. ≤ $(0.960)(e^{(0.8545[\ln(\text{hardness})] - 1.465)})$
q. ≤ $(0.791)(e^{(1.273[\ln(\text{hardness})] - 1.460)})$ at hardness = 100. Conversion factor (CF) of 0.791 is hardness dependent. CF is calculated for other hardnesses as follows: CF = 1.46203 - [(ln hardness)(0.145712)].
r. ≤ $(0.791)(e^{(1.273[\ln(\text{hardness})] - 4.705)})$ at hardness = 100. Conversion factor (CF) of 0.791 is hardness dependent. CF is calculated for other hardnesses as follows: CF = 1.46203 - [(ln hardness)(0.145712)].
s. If the four-day average chronic concentration is exceeded more than once in a three-year period, the edible portion of the consumed species should be analyzed. Said edible tissue concentrations shall not be allowed to exceed 1.0 mg/kg of methylmercury.
t. ≤ $(0.998)(e^{(0.8460[\ln(\text{hardness})] + 3.3612)})$
u. ≤ $(0.997)(e^{(0.8460[\ln(\text{hardness})] + 1.1645)})$
v. ≤ $e^{[1.005(\text{pH}) - 5.290]}$
w. ≤ $e^{[1.005(\text{pH}) - 4.830]}$
x. The status of the fish community should be monitored whenever the concentration of selenium exceeds 5.0 ug/ l in salt water.
y. ≤ $(0.85)(e^{(1.72[\ln(\text{hardness})] - 6.52)})$
z. Channel Catfish may be more acutely sensitive.
aa. ≤ $(0.978)(e^{(0.8473[\ln(\text{hardness})] + 0.8604)})$
bb. ≤ $(0.986)(e^{(0.8473[\ln(\text{hardness})] + 0.7614)})$
cc. Nonlethal effects (growth, C-14 uptake, and chlorophyll production) to diatoms (*Thalassiosira aestivalis* and *Skeletonema costatum*) which are common to Washington's waters have been noted at levels below the established criteria. The importance of these effects to the diatom populations and the aquatic system is sufficiently in question to persuade the state to adopt the USEPA National Criteria value (36 µg/L) as the state threshold criteria, however, wherever practical the ambient concentrations should not be allowed to exceed a chronic marine concentration of 21 µg/L.
dd. These ambient criteria in the table are for the dissolved fraction. The cyanide criteria are based on the weak acid dissociable method. The metals criteria may not be used to calculate total recoverable effluent limits unless the seasonal partitioning of the dissolved to total metals in the ambient water are known. When this information is absent, these metals criteria shall be applied as total recoverable values, determined by back-calculation, using the conversion factors incorporated in the criterion equations. Metals criteria may be adjusted on a site-specific basis when data are made available to the department clearly demonstrating the effective use of the water effects ratio approach established by USEPA, as generally guided by the procedures in USEPA Water Quality Standards Handbook, December 1983, as supplemented or replaced by USEPA or ecology. Information which is used to develop effluent limits based on applying metals partitioning studies or the water effects ratio approach shall be identified in the permit fact sheet developed pursuant to WAC **173-220-060** or **173-226-110** , as appropriate, and shall be made available for the public comment period required pursuant to WAC **173-220-050** or **173-226-130** (3), as appropriate. Ecology has developed supplemental guidance for conducting water effect ratio studies.
ee. The criteria for cyanide is based on the weak acid dissociable method in the 19th Ed. Standard Methods for the Examination of Water and Wastewater, 4500-CN I, and as revised (see footnote dd, above).
ff. These criteria are based on the total-recoverable fraction of the metal.
gg. Where methods to measure trivalent chromium are unavailable, these criteria are to be represented by total-recoverable chromium.
hh. The listed fresh water criteria are based on un-ionized or total ammonia concentrations, while those for marine water are based on un-ionized ammonia concentrations. Tables for the conversion of total ammonia to un-ionized ammonia for freshwater can be found in the USEPA's Quality Criteria for Water, 1986. Criteria concentrations based on total ammonia for marine water can be found in USEPA Ambient Water Quality Criteria for Ammonia (Saltwater)-1989, EPA440/ **5-88-004** , April 1989.
ii. The conversion factor used to calculate the dissolved metal concentration was 0.982.
jj. The conversion factor used to calculate the dissolved metal concentration was 0.962.
kk. The conversion factor used to calculate the dissolved metal concentration was 0.85.
ll. Marine conversion factors (CF) which were used for calculating dissolved metals concentrations are given below. Conversion factors are applicable to both acute and chronic criteria for all metals except mercury. The CF for mercury was applied to the acute criterion only and is not applicable to the chronic criterion. Conversion factors are already incorporated into the criteria in the table. Dissolved criterion = criterion x CF

Metal	CF
Arsenic	1.000
Cadmium	0.994
Chromium (VI)	0.993
Copper	0.83
Lead	0.951
Mercury	0.85
Nickel	0.990
Selenium	0.998
Silver	0.85
Zinc	0.946

mm. The cyanide criteria are: 2.8µg/l chronic and 9.1µg/l acute and are applicable only to waters which are east of a line from Point Roberts to Lawrence Point, to Green Point to Deception Pass; and south from Deception Pass and of a line from Partridge Point to Point Wilson. The chronic criterion applicable to the remainder of the marine waters is l µg/L.

Footnotes for human health criteria in Table 240:

A. This criterion for total arsenic is the maximum contaminant level (MCL) developed under the Safe Drinking Water Act. The MCL for total arsenic is applied to surface waters where consumption of organisms-only and where consumption of water + organisms reflect the designated uses. When the department determines that a direct or indirect industrial discharge to surface waters designated for domestic water supply may be adding arsenic to its wastewater, the department will require the

discharger to develop and implement a pollution prevention plan to reduce arsenic through the use of AKART. Industrial wastewater discharges to a privately or publicly owned wastewater treatment facility are considered indirect discharges.

B. This criterion was calculated based on an additional lifetime cancer risk of one-in-one-million (1×10^{-6} risk level).
C. This criterion is based on a regulatory level developed under the Safe Drinking Water Act.
D. This recommended water quality criterion is expressed as total cyanide, even though the integrated risk information system RfD used to derive the criterion is based on free cyanide. The multiple forms of cyanide that are present in ambient water have significant differences in toxicity due to their differing abilities to liberate the CN-moiety. Some complex cyanides require even more extreme conditions than refluxing with sulfuric acid to liberate the CN-moiety. Thus, these complex cyanides are expected to have little or no "bioavailability" to humans. If a substantial fraction of the cyanide present in a water body is present in a complexed form (e.g., Fe4[Fe(CN)6]3), this criterion may be overly conservative.
E. This criterion applies to total PCBs, (e.g., the sum of all congener or all isomer or homolog or Aroclor analyses). The PCBs criteria were calculated using a chemical-specific risk level of 4×10^{-5}. Because that calculation resulted in a higher (less protective) concentration than the current criterion concentration (40 C.F.R. 131.36) the state made a chemical-specific decision to stay at the current criterion concentration.
F. This criterion was derived using the cancer slope factor of 1.4 (linearized multistage model with a twofold increase to 1.4 per mg/kg-day to account for continuous lifetime exposure from birth).
G. The human health criteria for mercury are contained in 40 C.F.R. 131.36.

[Statutory Authority: RCW **90.48.035**, **90.48.605** and section 303(c) of the Federal Water Pollution Control Act (Clean Water Act), C.F.R. 40, C.F.R. 131. WSR 16-16-095 (Order 12-03), § 173-201A-240, filed 8/1/16, effective 9/1/16. Statutory Authority: RCW **90.48.035**. WSR 11-09-090 (Order 10-10), § 173-201A-240, filed 4/20/11, effective 5/21/11; WSR 06-23-117 (Order 06-04), § 173-201A-240, filed 11/20/06, effective 12/21/06. Statutory Authority: Chapters **90.48** and **90.54** RCW. WSR 03-14-129 (Order 02-14), amended and recodified as § 173-201A-240, filed 7/1/03, effective 8/1/03. Statutory Authority: Chapter **90.48** RCW and 40 C.F.R. 131. WSR 97-23-064 (Order 94-19), § 173-201A-040, filed 11/18/97, effective 12/19/97. Statutory Authority: Chapter **90.48** RCW. WSR 92-24-037 (Order 92-29), § 173-201A-040, filed 11/25/92, effective 12/26/92.]

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

WAC 173-201A-260

Natural conditions and other water quality criteria and applications.

(1) **Natural and irreversible human conditions.**

(a) It is recognized that portions of many water bodies cannot meet the assigned criteria due to the natural conditions of the water body. When a water body does not meet its assigned criteria due to natural climatic or landscape attributes, the natural conditions constitute the water quality criteria.

(b) When a water body does not meet its assigned criteria due to human structural changes that cannot be effectively remedied (as determined consistent with the federal regulations at 40 C.F.R. 131.10), then alternative estimates of the attainable water quality conditions, plus any further allowances for human effects specified in this chapter for when natural conditions exceed the criteria, may be used to establish an alternative criteria for the water body (see WAC **173-201A-430** and **173-201A-440**).

(2) **Toxics and aesthetics criteria.** The following narrative criteria apply to all existing and designated uses for fresh and marine water:

(a) Toxic, radioactive, or deleterious material concentrations must be below those which have the potential, either singularly or cumulatively, to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent upon those waters, or adversely affect public health (see WAC **173-201A-240**, toxic substances, and **173-201A-250**, radioactive substances).

(b) Aesthetic values must not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch, or taste (see WAC **173-201A-230** for guidance on establishing lake nutrient standards to protect aesthetics).

(3) **Procedures for applying water quality criteria.** In applying the appropriate water quality criteria for a water body, the department will use the following procedure:

(a) The department will establish water quality requirements for water bodies, in addition to those specifically listed in this chapter, on a case-specific basis where determined necessary to provide full support for designated and existing uses.

(b) Upstream actions must be conducted in manners that meet downstream water body criteria. Except where and to the extent described otherwise in this chapter, the criteria associated with the most upstream uses designated for a water body are to be applied to headwaters to protect nonfish aquatic species and the designated downstream uses.

(c) Where multiple criteria for the same water quality parameter are assigned to a water body to protect different uses, the most stringent criterion for each parameter is to be applied.

(d) At the boundary between water bodies protected for different uses, the more stringent criteria apply.

(e) In brackish waters of estuaries, where different criteria for the same use occurs for fresh and marine waters, the decision to use the fresh water or the marine water criteria must be selected and applied on the basis of vertically averaged daily maximum salinity, referred to below as "salinity."

(i) The fresh water criteria must be applied at any point where ninety-five percent of the salinity values are less than or equal to one part per thousand, except that the fresh water criteria for bacteria applies when the salinity is less than ten parts per thousand; and

(ii) The marine water criteria must apply at all other locations where the salinity values are greater than one part per thousand, except that the marine criteria for bacteria applies when the salinity is ten parts per thousand or greater.

(f) Numeric criteria established in this chapter are not intended for application to human created waters managed primarily for the removal or containment of pollution. This special provision also includes private farm ponds created from upland sites that did not incorporate natural water bodies.

(i) Waters covered under this provision must be managed so that:

(A) They do not create unreasonable risks to human health or uses of the water; and

(B) Discharges from these systems meet down gradient surface and ground water quality standards.

(ii) This provision does not apply to waterways designed and managed primarily to convey or transport water from one location to another, rather than to remove pollution en route.

(g) When applying the numeric criteria established in this chapter, the department will give consideration to the precision and accuracy of the sampling and analytical methods used, as well as the existing conditions at the time.

(h) The analytical testing methods for these numeric criteria must be in accordance with the "*Guidelines Establishing Test Procedures for the Analysis of Pollutants*" (*40 C.F.R. Part 136*) or superseding methods published. The department may also approve other methods following consultation with adjacent states and with the approval of the USEPA.

(i) The primary means for protecting water quality in wetlands is through implementing the antidegradation procedures described in Part III of this chapter.

(i) In addition to designated uses, wetlands may have existing beneficial uses that are to be protected that include ground water exchange, shoreline stabilization, and stormwater attenuation.

(ii) Water quality in wetlands is maintained and protected by maintaining the hydrologic conditions, hydrophytic vegetation, and substrate characteristics necessary to support existing and designated uses.

(iii) Wetlands must be delineated using the *Washington State Wetlands Identification and Delineation Manual*, in accordance with WAC **173-22-035**.

[Statutory Authority: RCW **90.48.035**. WSR 11-09-090 (Order 10-10), § 173-201A-260, filed 4/20/11, effective 5/21/11. Statutory Authority: Chapters **90.48** and **90.54** RCW. WSR 03-14-129 (Order 02-14), § 173-201A-260, filed 7/1/03, effective 8/1/03.]

WAC 173-201A-400

Mixing zones.

(1) The allowable size and location of a mixing zone and the associated effluent limits shall be established in discharge permits, general permits, or orders, as appropriate.

(2) A discharger shall be required to fully apply AKART prior to being authorized a mixing zone.

(3) Mixing zone determinations shall consider critical discharge conditions.

(4) No mixing zone shall be granted unless the supporting information clearly indicates the mixing zone would not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem, or adversely affect public health as determined by the department.

(5) Water quality criteria shall not be violated outside of the boundary of a mixing zone as a result of the discharge for which the mixing zone was authorized.

(6) The size of a mixing zone and the concentrations of pollutants present shall be minimized.

(7) The maximum size of a mixing zone shall comply with the following:

(a) In rivers and streams, mixing zones, singularly or in combination with other mixing zones, shall comply with the most restrictive combination of the following (this size limitation may be applied to estuaries having flow characteristics that resemble rivers):

(i) Not extend in a downstream direction for a distance from the discharge port(s) greater than three hundred feet plus the depth of water over the discharge port(s), or extend upstream for a distance of over one hundred feet;

(ii) Not utilize greater than twenty-five percent of the flow; and

(iii) Not occupy greater than twenty-five percent of the width of the water body.

(b) In estuaries, mixing zones, singularly or in combination with other mixing zones, shall:

(i) Not extend in any horizontal direction from the discharge port(s) for a distance greater than two hundred feet plus the depth of water over the discharge port(s) as measured during mean lower low water; and

(ii) Not occupy greater than twenty-five percent of the width of the water body as measured during mean lower low water. For the purpose of this section, areas to the east of a line from Green Point (Fidalgo Island) to Lawrence Point (Orcas Island) are considered estuarine, as are all of the Strait of Georgia and the San Juan Islands north of Orcas Island. To the east of Deception Pass, and to the south and east of Admiralty Head, and south of Point Wilson on the Quimper Peninsula, is Puget Sound proper, which is considered to be entirely estuarine. All waters existing within bays from Point Wilson westward to Cape Flattery and south to the North Jetty of the Columbia River shall also be categorized as estuarine.

(c) In oceanic waters, mixing zones, singularly or in combination with other mixing zones, shall not extend in any horizontal direction from the discharge port(s) for a distance greater than three hundred feet plus the depth of water over the discharge port(s) as measured during mean lower low water. For the purpose of this section, all marine waters not classified as estuarine in (b)(ii) of this subsection shall be categorized as oceanic.

(d) In lakes, and in reservoirs having a mean detention time greater than fifteen days, mixing zones shall not be allowed unless it can be demonstrated to the satisfaction of the department that:

(i) Other siting, technological, and managerial options that would avoid the need for a lake mixing zone are not reasonably achievable;

(ii) Overriding considerations of the public interest will be served; and

(iii) All technological and managerial methods available for pollution reduction and removal that are economically achievable would be implemented prior to discharge. Such methods may include, but not be limited to, advanced waste treatment techniques.

(e) In lakes, and in reservoirs having a mean detention time greater than fifteen days, mixing zones, singularly or in combination with other mixing zones, shall comply with the most restrictive combination of the following:

(i) Not exceed ten percent of the water body volume;

(ii) Not exceed ten percent of the water body surface area (maximum radial extent of the plume regardless of whether it reaches the surface); and

(iii) Not extend beyond fifteen percent of the width of the water body.

(8) Acute criteria are based on numeric criteria and toxicity tests approved by the department, as generally guided under WAC **173-201A-240** (1) through (5), and shall be met as near to the point of discharge as practicably attainable. Compliance shall be determined by monitoring data or calibrated models approved by the department utilizing representative dilution ratios. A zone where acute criteria may be exceeded is allowed only if it can be demonstrated to the department's satisfaction the concentration of, and duration and frequency of exposure to the discharge, will not create a barrier to the migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem. A zone of acute criteria exceedance shall singularly or in combination with other such zones comply with the following maximum size requirements:

(a) In rivers and streams, a zone where acute criteria may be exceeded shall comply with the most restrictive combination of the following (this size limitation may also be applied to estuaries having flow characteristics resembling rivers):

(i) Not extend beyond ten percent of the distance towards the upstream and downstream boundaries of an authorized mixing zone, as measured independently from the discharge port(s);

(ii) Not utilize greater than two and one-half percent of the flow; and

(iii) Not occupy greater than twenty-five percent of the width of the water body.

(b) In oceanic and estuarine waters a zone where acute criteria may be exceeded shall not extend beyond ten percent of the distance established in subsection (7)(b) of this section as measured independently from the discharge port(s).

(9) Overlap of mixing zones.

(a) Where allowing the overlap of mixing zones would result in a combined area of water quality criteria nonattainment which does not exceed the numeric size limits established under subsection (7) of this section, the overlap may be permitted if:

(i) The separate and combined effects of the discharges can be reasonably determined; and

(ii) The combined effects would not create a barrier to the migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.

(b) Where allowing the overlap of mixing zones would result in exceedance of the numeric size limits established under subsection (7) of this section, the overlap may be allowed only where:

(i) The overlap qualifies for exemption under subsections (12) and (13) of this section; and

(ii) The overlap meets the requirements established in (a) of this subsection.

(10) Stormwater:

(a) Stormwater discharge from any "point source" containing "process wastewater" as defined in 40 C.F.R. Part 122.2 shall fully conform to the numeric size criteria in subsections (7) and (8) of this section and the overlap criteria in subsection (9) of this section.

(b) Stormwater discharges not described by (a) of this subsection may be granted an exemption to the numeric size criteria in subsections (7) and (8) of this section and the overlap criteria in subsection (9) of this section, provided the discharger clearly demonstrates to the department's satisfaction that:

(i) All appropriate best management practices established for stormwater pollutant control have been applied to the discharge.

(ii) The proposed mixing zone shall not have a reasonable potential to result in a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem, or adversely affect public health as determined by the department; and

(iii) The proposed mixing zone shall not create a barrier to the migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.

(c) All mixing zones for stormwater discharges shall be based on a volume of runoff corresponding to a design storm approved by the department. Exceedances from the numeric size criteria in subsections (7) and (8) of this section and the overlap criteria in subsection (9) of this section due to precipitation events

greater than the approved design storm may be allowed by the department, if it would not result in adverse impact to existing or characteristic uses of the water body or result in damage to the ecosystem, or adversely affect public health as determined by the department.

(11) Combined sewer overflows complying with the requirements of chapter **173-245** WAC, may be allowed an average once per year exemption to the numeric size criteria in subsections (7) and (8) of this section and the overlap criteria in subsection (9) of this section, provided the discharge complies with subsection (4) of this section.

(12) Exceedances from the numeric size criteria in subsections (7) and (8) of this section and the overlap criteria in subsection (9) of this section may be considered by the department in the following cases:

(a) For discharges existing prior to November 24, 1992, (or for proposed discharges with engineering plans formally approved by the department prior to November 24, 1992);

(b) Where altering the size configuration is expected to result in greater protection to existing and characteristic uses;

(c) Where the volume of water in the effluent is providing a greater benefit to the existing or characteristic uses of the water body due to flow augmentation than the benefit of removing the discharge, if such removal is the remaining feasible option; or

(d) Where the exceedance is clearly necessary to accommodate important economic or social development in the area in which the waters are located.

(13) Before an exceedance from the numeric size criteria in subsections (7) and (8) of this section and the overlap criteria in subsection (9) of this section may be allowed under subsection (12) of this section, it must clearly be demonstrated to the department's satisfaction that:

(a) AKART appropriate to the discharge is being fully applied;

(b) All siting, technological, and managerial options which would result in full or significantly closer compliance that are economically achievable are being utilized; and

(c) The proposed mixing zone complies with subsection (4) of this section.

(14) Any exemptions granted to the size criteria under subsection (12) of this section shall be reexamined during each permit renewal period for changes in compliance capability. Any significant increase in capability to comply shall be reflected in the renewed discharge permit.

(15) The department may establish permit limits and measures of compliance for human health based criteria (based on lifetime exposure levels), independent of this section.

(16) Sediment impact zones authorized by the department pursuant to chapter **173-204** WAC, Sediment management standards, do not satisfy the requirements of this section.

[Statutory Authority: Chapters **90.48** and **90.54** RCW. WSR 03-14-129 (Order 02-14), amended and recodified as § 173-201A-400, filed 7/1/03, effective 8/1/03. Statutory Authority: Chapter **90.48** RCW. WSR 92-24-037 (Order 92-29), § 173-201A-100, filed 11/25/92, effective 12/26/92.]

WAC 173-201A-510

Means of implementation.

(1) **Permitting.** The primary means to be used for controlling municipal, commercial, and industrial waste discharges shall be through the issuance of waste discharge permits, as provided for in RCW **90.48.160**, **90.48.162**, and **90.48.260**. Waste discharge permits, whether issued pursuant to the National Pollutant Discharge Elimination System or otherwise, must be conditioned so the discharges authorized will meet the water quality standards. No waste discharge permit can be issued that causes or contributes to a violation of water quality criteria, except as provided for in this chapter.

(a) Persons discharging wastes in compliance with the terms and conditions of permits are not subject to civil and criminal penalties on the basis that the discharge violates water quality standards.

(b) Permits must be modified by the department when it is determined that the discharge causes or contributes to a violation of water quality standards. Major modification of permits is subject to review in the same manner as the originally issued permits.

(2) **Miscellaneous waste discharge or water quality effect sources.** The director shall, through the issuance of regulatory permits, directives, and orders, as are appropriate, control miscellaneous waste discharges and water quality effect sources not covered by subsection (1) of this section.

(3) **Nonpoint source and stormwater pollution.**

(a) Activities which generate nonpoint source pollution shall be conducted so as to comply with the water quality standards. The primary means to be used for requiring compliance with the standards shall be through best management practices required in waste discharge permits, rules, orders, and directives issued by the department for activities which generate nonpoint source pollution.

(b) Best management practices shall be applied so that when all appropriate combinations of individual best management practices are utilized, violation of water quality criteria shall be prevented. If a discharger is applying all best management practices appropriate or required by the department and a violation of water quality criteria occurs, the discharger shall modify existing practices or apply further water pollution control measures, selected or approved by the department, to achieve compliance with water quality criteria. Best management practices established in permits, orders, rules, or directives of the department shall be reviewed and modified, as appropriate, so as to achieve compliance with water quality criteria.

(c) Activities which contribute to nonpoint source pollution shall be conducted utilizing best management practices to prevent violation of water quality criteria. When applicable best management practices are not being implemented, the department may conclude individual activities are causing pollution in violation of RCW **90.48.080**. In these situations, the department may pursue orders, directives, permits, or civil or criminal sanctions to gain compliance with the standards.

(d) Activities which cause pollution of stormwater shall be conducted so as to comply with the water quality standards. The primary means to be used for requiring compliance with the standards shall be through best management practices required in waste discharge permits, rules, orders, and directives issued by the department for activities which generate stormwater pollution. The consideration and control procedures in (b) and (c) of this subsection apply to the control of pollutants in stormwater.

(4) **General allowance for compliance schedules.**

(a) Permits and orders issued by the department for existing discharges may include a schedule for achieving compliance with effluent limits and water quality standards that apply to:

(i) Aquatic life uses; and

(ii) Uses other than aquatic life.

(b) Schedules of compliance shall be developed to ensure final compliance with all water quality-based effluent limits and the water quality standards as soon as possible. The department will decide whether to issue schedules of compliance on a case-by-case basis. Schedules of compliance may not be issued for new discharges. Examples of schedules of compliance that may be issued include:

(i) Construction of necessary treatment capability;

(ii) Implementation of necessary best management practices;

(iii) Implementation of additional stormwater best management practices for discharges determined not to meet water quality standards following implementation of an initial set of best management practices; and

(iv) Completion of necessary water quality studies related to implementation of permit requirements to meet effluent limits.

(c) For the period of time during which compliance with water quality standards is deferred, interim effluent limits shall be formally established, based on the best professional judgment of the department. Interim effluent limits may be numeric or nonnumeric (e.g., construction of necessary facilities by a specified date as contained in an order or permit), or both.

(d) Prior to establishing a schedule of compliance, the department shall require the discharger to evaluate the possibility of achieving water quality standards via nonconstruction changes (e.g., facility operation, pollution prevention). Schedules of compliance shall require compliance with the specified requirements as soon as possible. Compliance schedules shall generally not exceed the term of any permit unless the department determines that a longer time period is needed to come into compliance with the applicable water quality standards.

(e) When an approved total maximum daily load has established waste load allocations for permitted dischargers, the department may authorize a compliance schedule longer than ten years if:

(i) The permittee is not able to meet its waste load allocation in the TMDL solely by controlling and treating its own effluent;

(ii) The permittee has made significant progress to reduce pollutant loading during the term of the permit;

(iii) The permittee is meeting all of its requirements under the TMDL as soon as possible; and

(iv) Actions specified in the compliance schedule are sufficient to achieve water quality standards as soon as possible.

(5) **Compliance schedules for dams:**

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

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

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

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

(iii) Any department-approved gas abatement plan as described in WAC **173-201A-200** (1)(f)(ii);

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

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

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

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

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

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

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

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

steps:

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

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

(h) New dams, and any modifications to existing facilities that do not comply with a gas abatement or other pollution control plan established to meet criteria for the water body, must comply with the water quality standards at the time of project completion.

(i) Structural changes made as a part of a department approved gas abatement plan to aid fish passage, described in WAC **173-201A-200** (1)(f)(ii), may result in system performance limitations in meeting water quality criteria for that parameter at other times of the year.

(6) **Combined sewer overflow treatment plant.** The influent to these facilities is highly variable in frequency, volume, duration, and pollutant concentration. The primary means to be used for requiring compliance with the human health criteria shall be through the application of narrative limitations which include, but are not limited to, best management practices required in waste discharge permits, rules, orders and directives issued by the department.

[Statutory Authority: RCW **90.48.035**, **90.48.605** and section 303(c) of the Federal Water Pollution Control Act (Clean Water Act), C.F.R. 40, C.F.R. 131. WSR 16-16-095 (Order 12-03), § 173-201A-510, filed 8/1/16, effective 9/1/16. Statutory Authority: Chapters **90.48** and **90.54** RCW. WSR 03-14-129 (Order 02-14), amended and recodified as § 173-201A-510, filed 7/1/03, effective 8/1/03. Statutory Authority: Chapter **90.48** RCW and 40 C.F.R. 131. WSR 97-23-064 (Order 94-19), § 173-201A-160, filed 11/18/97, effective 12/19/97. Statutory Authority: Chapter **90.48** RCW. WSR 92-24-037 (Order 92-29), § 173-201A-160, filed 11/25/92, effective 12/26/92.]

WAC 173-220-130

Effluent limitations, water quality standards and other requirements for permits.

(1) Any permit issued by the department shall apply and insure compliance with all of the following, whenever applicable:

(a) All known, available, and reasonable methods of treatment required under RCW **90.52.040**, **90.54.020** (3)(b), and **90.48.520**; including effluent limitations established under sections 301, 302, 306, and 307 of the FWPCA. The effluent limitations shall not be less stringent than those based upon the treatment facility design efficiency contained in approved engineering plans and reports or approved revisions thereto. The effluent limitations shall reflect any seasonal variation in industrial loading. Modifications to technology-based effluent limitations for specific discharge categories are as follows:

(i) For combined waste treatment facilities, the effluent limitations for biochemical oxygen demand or suspended solids may be adjusted upwards to a maximum allowed by applying effluent limitations pursuant to sections 301 (b)(1)(B) of the FWPCA to the domestic portion of the influent and effluent limitations pursuant to sections 301 (b)(1)(A)(i), 301 (b)(2)(A), and 301 (b)(2)(E) of the FWPCA or standards of performance pursuant to section 306 of the FWPCA to the industrial portion of the influent: Provided, That the following additional condition is met:

Fecal coliform levels shall not exceed a monthly geometric mean of 200 organisms per 100 ml with a maximum weekly geometric mean of 400 organisms per 100 ml;

(ii) For municipal water treatment plants located on the Chehalis, Columbia, Cowlitz, Lewis, or Skagit river, the effluent limitations shall be adjusted, in accordance with RCW **90.54.020** (3)(b), to reflect credit for substances removed from the plant intake water if:

(A) The municipality demonstrates that the intake water is drawn from the same body of water into which the discharge is made; and

(B) The municipality demonstrates that no violation of receiving water quality standards or appreciable environmental degradation will result.

(b) Any more stringent limitation, including those necessary to:

(i) Meet water quality standards, treatment standards or schedules of compliance established pursuant to any state law or regulation under authority preserved to the state by section 510 of the FWPCA; or

(ii) Meet any federal law or regulation other than the FWPCA or regulations thereunder; or

(iii) Implement any applicable water quality standards; such limitations to include any legally applicable requirements necessary to implement total maximum daily loads established pursuant to section 303(d) and incorporated in the continuing planning process approved under section 303(e) of the FWPCA and any regulations and guidelines issued pursuant thereto;

(iv) Prevent or control pollutant discharges from plant site runoff, spillage or leaks, sludge or waste disposal, or materials handling or storage; and

(v) Meet the permit by rule provisions of the state dangerous waste regulation, WAC **173-303-802** (4) or (5).

(c) Any more stringent legal applicable requirements necessary to comply with a plan approved pursuant to section 208(b) of the FWPCA; and

(d) Prior to promulgation by the administrator of applicable effluent standards and limitations pursuant to sections 301, 302, 306, and 307 of the FWPCA, such conditions as the department determines are necessary to carry out the provisions of the FWPCA.

(2) In any case where an issued permit applies the effluent standards and limitations described in subsection (1)(a) of this section, the department shall make a finding that any discharge authorized by the permit will not violate applicable water quality standards.

(3) In the application of effluent standards and limitations, water quality standards and other legally applicable requirements pursuant to subsections (1) and (2) of this section, each issued permit shall specify:

(a) For industrial wastewater facilities, average monthly and maximum daily quantitative mass and/or concentration limitations, or other such appropriate limitations for the level of pollutants and the authorized discharge;

(b) For domestic wastewater facilities, average weekly and monthly quantitative concentration and mass limitations, or other such appropriate limitations for the level of pollutants and the authorized discharge; and

(c) If a dilution zone is authorized within which water quality standards are modified, the dimensions of such dilution zone.

[Statutory Authority: RCW **90.54.020** and chapter **90.48** RCW. WSR 88-22-059 (Order 88-9), § 173-220-130, filed 11/1/88. Statutory Authority: RCW **90.48.035** and **90.48.260**. WSR 82-24-078 (Order DE 82-39), § 173-220-130, filed 12/1/82; Order DE 74-1, § 173-220-130, filed 2/15/74.]

WAC 173-220-150

Other terms and conditions.

(1) In addition to the requirements of WAC **173-220-130** and **173-220-140**, each issued permit shall require that:

(a) All discharges authorized by the permit shall be consistent with the terms and conditions of the permit;

(b) Any facility expansions, production increases or process modifications which would result in new or increased discharges of pollutants causing effluent limitations in the permit to be exceeded must be reported to the department by submission of a new application or supplement thereto; or, if such discharge does not violate effluent limitations specified in the permit, by submission to the department of notice of such new or increased discharges of pollutants;

(c) Any discharge of any pollutant more frequent than or at a level in excess of that identified and authorized by the permit shall constitute a violation of the terms and conditions of the permit;

(d) The permit may be modified or revoked in whole or in part during its terms for cause including, but not limited to, the following:

(i) Violation of any term or condition of the permit;

(ii) Obtaining a permit by misrepresentation or failure to disclose fully all relevant facts;

(iii) A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

(iv) A determination that the permitted activity endangers human health or the environment, or contributes to water quality standards violations;

(v) Incorporation of an approved local pretreatment program into a municipality's permit;

(vi) Establishment of a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) under section 307(a) of the FWPCA for a toxic pollutant which is more stringent than any limitation upon such pollutant in the permit;

(vii) Failure or refusal of the permittee to allow entry as required in RCW **90.48.090**; and

(viii) Nonpayment of permit fees assessed pursuant to RCW **90.48.610**.

(e) The permittee shall allow the department or its authorized representative upon the presentation of credentials and at reasonable times:

(i) To enter upon permittee's premises in which an effluent source is located or in which any records are required to be kept under terms and conditions of the permit, subject to any access restrictions due to the nature of the project;

(ii) To have access to, and copy at reasonable cost, any records required to be kept under terms and conditions of the permit;

(iii) To inspect any monitoring equipment or method required in the permit; and

(iv) To sample any discharge of pollutants.

(f) If the permit is for a discharge from a publicly owned treatment works, the permittee shall provide notice to the department of the following:

(i) Any new introduction of pollutants into such treatment works from a source which would be a new source as defined in section 306 of the FWPCA if such source were discharging pollutants;

(ii) Except as to such categories and classes of point sources or discharges specified by the department, any new introduction of pollutants into such treatment works from a source which would be subject to section 301 of the FWPCA if such source were discharging pollutants;

(iii) Any substantial change in volume or character of pollutants being introduced into such treatment works by a source existing at the time of issuance of the permit.

Such notice shall include information on:

(A) The quality and quantity of effluent to be introduced into such treatment works; and

(B) Any anticipated impact of such change in the quantity or quality of effluent to be discharged from such publicly owned treatment works.

(g) The permittee shall at all times properly operate and maintain any facilities or systems of control installed by the permittee to achieve compliance with the terms and conditions of the permit. Where design criteria have been established, the permittee shall not allow flows or waste loadings to exceed approved design criteria, or approved revisions thereto.

(2) Every permit shall be conditioned to insure that any industrial user of any publicly owned treatment works will comply with sections 204(b), 307, and 308 of the FWPCA.

(3) When deemed necessary by the department, any publicly owned treatment works shall be required to develop a full or partial local pretreatment program as specified in 40 C.F.R. Part 403. Permit conditions for a municipality which has received full local pretreatment program approval shall include:

(a) Granting of authority to issue permits under chapter **173-208** WAC;

(b) A requirement to develop, adopt, and enforce a program that is at least as stringent as the department's program under chapter **173-216** WAC; and

(c) A requirement to report to the department at a specified frequency on the status of its implementation.

(4) Permits for domestic wastewater facilities shall be issued only to a public entity, except in the following circumstances:

(a) Facilities existing or approved for construction with private operation on or before the effective date of this chapter, until such time as the facility is expanded; or

(b) Facilities that serve a single nonresidential, industrial, or commercial establishment. Commercial/industrial complexes serving multiple owners or tenants and multiple residential dwelling facilities such as mobile home parks, apartments, and condominiums are not considered single commercial establishments for the purpose of the preceding sentence.

(5) For facilities that are owned by nonpublic entities and under contract to a public entity, the permit shall be issued to the public entity.

[Statutory Authority: RCW **90.54.020** and chapter **90.48** RCW. WSR 88-22-059 (Order 88-9), § 173-220-150, filed 11/1/88. Statutory Authority: Chapter **43.21A** RCW. WSR 88-12-035 (Order 88-8), § 173-220-150, filed 5/26/88, effective 7/1/88; WSR 86-06-040 (Order 86-03), § 173-220-150, filed 3/4/86. Statutory Authority: Chapter **90.48** RCW. WSR 84-11-024 (Order DE 84-19), § 173-220-150, filed 5/11/84. Statutory Authority: RCW **90.48.035** and **90.48.260**. WSR 82-24-078 (Order DE 82-39), § 173-220-150, filed 12/1/82; Order DE 74-1, § 173-220-150, filed 2/15/74.]