Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington, DC 20515

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October 1, 2021

SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Water Resources and Environment
FROM: Staff, Subcommittee on Water Resources and Environment
RE: Subcommittee Hearing on "Emerging Contaminants, Forever Chemicals, and More: Challenges to Water Quality, Public Health, and Communities"

PURPOSE

The Subcommittee on Water Resources and Environment will meet on Wednesday, October 6, 2021, at 11:00 a.m. EDT in the Rayburn House Office Building, Room 2167, and by video conferencing via Zoom, to receive testimony on "Emerging Contaminants, Forever Chemicals, and More: Challenges to Water Quality, Public Health, and Communities." The purpose of this hearing is to examine various perspectives on emerging contaminants, including so-called "forever chemicals," and their impacts on public health and water quality.

BACKGROUND

This memorandum provides a summary of both unregulated contaminants and those of growing concern in surface waters, and their effects or potential effects on human health or aquatic ecosystems. The memorandum also discusses the Clean Water Act's (CWA) framework for addressing contaminants of concern in surface waters.

Emerging Contaminants

Emerging contaminant, often called contaminant of emerging concern (CEC), is a term that has been used by the Environmental Protection Agency (EPA) and water quality professionals to loosely describe various chemicals and other substances that have been detected in water bodies, that may cause ecological or human health effects and for which the scientific understanding of potential risks is evolving.[1] CECs typically are not regulated under current environmental laws.[2] CECs include various types of manufactured chemicals and substances, as well as naturally occurring substances, which may be found in lakes, rivers, and streams, and may have a detrimental

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[1] *See, e.g.,* Congressional Research Service, *Contaminants of Emerging Concern under the Clean Water Act*, Report No. R45998 (Nov. 7, 2019) https://crsreports.congress.gov/product/pdf/R/R45998); Advisory Report of the Environmental Protection Agency, Science Advisory Board, *SAB Advisory on Aquatic Life Water Quality Criteria for Contaminants of Emerging Concern*, (Dec. 18, 2008) *available at* https://www.epa.gov/sites/default/files/2015-08/documents/sab_advisory_on_aquatic_life_wqc_for_contaminants_of_emerging_concern.pdf.

[2] *See* Congressional Research Service, *Contaminants of Emerging Concern under the Clean Water Act*, Report No. R45998 (Nov. 7, 2019) (located at https://crsreports.congress.gov/product/pdf/R/R45998).

effect on fish and other aquatic species.[3] According to the United States Geological Survey (USGS), some CECs have been known to bioaccumulate up the food chain—potentially exposing non-aquatic species through the consumption of contaminated fish. The USGS monitors and assesses CECs from their sources to waterways and all the way through the food web.[4]

The potential range of CECs includes:

- Toxic chemicals, including persistent organic pollutants;
- Pharmaceuticals, analgesics, and antibiotics;
- Hormones;
- Surfactants;
- Personal care products;
- Veterinary medicines;
- Endocrine-disrupting chemicals; and
- Nanomaterials.

Emerging Contaminants in Surface Waters

The USGS has the primary federal responsibility for water-quality monitoring of the nation's waters. Through its National Water Quality Assessment (NWQA) and the Toxic Substances Hydrology (Toxics) Program, it is a national leader in identifying CECs in the nation's surface, ground, and drinking waters. The USGS engages in program and research activities in the area of CECs, and coordinates and collaborates with other agencies such as the EPA, including with analytical methods development, occurrence in the environment, sources and source pathways, transport and fate, and ecological effects.[5]

The fiscal year (FY) 2020 enacted budget for the NWQA program was $92.5 million, and $93.5 for FY2021.[6] For the Toxic Substances Hydrology Program, the FY 2020 budget was $13.1 million and for FY 2021 it was $14.3 million.[7] The president's proposed FY 2022 budget requests $95.2 million for the NWQA program and $14.6 million for the Toxics program.[8]

In 2002, the USGS researchers released the first nationwide study of the occurrence of pharmaceuticals, hormones, and other organic wastewater contaminants in U.S. streams.[9] Since 2002, the USGS has published

[3] *Id.*
[4] U.S. Geological Service, *Mission Areas*, https://www.usgs.gov/mission-areas/water-resources/science/emerging-contaminants?qt-science_center_objects=0#qt-science_center_objects.
[5] *See* U.S. Geological Survey. *More Information on the Contaminants of Emerging Concern in the Environment Investigation*. Accessed at https://toxics.usgs.gov/investigations/cec/more_cec/index.html
[6] U.S. Geological Survey. *Budget Justification and Performance Information – Fiscal Year 2022*. Page 99. Accessed at https://prd-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/atoms/files/FY2022%20USGS%20Budget%20Justification%20%28Greenbook%29.pdf
[7] U.S. Geological Survey. *Budget Justification and Performance Information – Fiscal Year 2022*. Page 9. Accessed at https://prd-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/atoms/files/FY2022%20USGS%20Budget%20Justification%20%28Greenbook%29.pdf
[8] *Id.*
[9] Kolpin, D.W., et al., 2002. "Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams, 1999-2000: A National Reconnaissance." *Environmental Science and Technology*. 36: 1202-1211.

hundreds of reports that document and demonstrate the existence of these substances in U.S. waters, the sources of these substances, the assimilations of some of these by organisms,[10] and adverse ecological health effects.[11]

The 2002 USGS study involved monitoring for 95 CECs that may be associated with human, industrial, and agricultural waste, including antibiotics, other prescription drugs, steroids, reproductive hormones, personal care products, products of oil use and combustion, insecticides, fire retardants, solvents, and plasticizers, among others.[12] Samples were chosen based on being downstream from urban centers or livestock production, and therefore vulnerable to contamination.[13] Therefore, these results are not representative of all streams across the United States.

The 2002 study identified one or more CEC in 80% of sampled streams, with 86% of the CECs detected at least once.[14] A median of seven CECs were found in those streams in which the study authors identified a target CEC, with one stream containing 38 of the targeted CEC.[15] For interpretive purposes, the authors sorted the 95 CECs into 15 categories, based on their uses or origins.[16] At least six of those categories—steroids, nonprescription drugs, insect repellent, detergent constituents, disinfectants, and plasticizers—showed up in over 60% of the streams tested. Another three categories—steroids, detergent constituents, and plasticizers—made up almost 80% of the total measured concentration of contaminants.[17]

While measured concentrations of individual compounds were generally low, total combined concentrations of all targeted CECs were considerably higher in a number of instances.[18] For those substances that have drinking water guidelines or aquatic life criteria associated with them, ambient levels were not, for the most part, exceeded.[19] However, the authors noted that "many of the 95 Organic Wastewater Contaminants (OWCs) do not have such guidelines or criteria determined…."[20] Thirty-three of the 95 target CECs are known, or are suspected, to exhibit at least weak hormonal influence, with the potential to disrupt normal endocrine function.[21] All of these known or suspected endocrine disruptors were detected in at least one of the stream samples during the study.[22] The study authors note that "measures of concentrations of reproductive hormones may have greater implications for health of aquatic organisms than measured concentrations of nonprescription drugs."[23] In sum, the 2002 USGS study authors concluded the implications of this research are that many such compounds survive wastewater treatment and biodegradation.[24]

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[10] *Recent studies include:* Kinney, C.A. et al. 2008. "Bioaccumulation of pharmaceuticals and other anthropogenic water indicators in earthworks from agricultural soil amended with biosolid or swine manure." *Environmental Science and Technology*. 42: 1863-1870. and Muir, D., Simmons, D., Wang, X. *et al.* "Bioaccumulation of pharmaceuticals and personal care product chemicals in fish exposed to wastewater effluent in an urban wetland." *Sci Rep* **7,** 16999 (2017). https://doi.org/10.1038/s41598-017-15462-x

[11] *Recent studies include*: Vajda, A.M., et al., 2008. "Reproductive Disruption in Fish Downstream of an Estrogenic Wastewater Effluent." Environmental Science and Technology. 42(9):3407-14 and Pereira, L.C., de Souza, A.O., Bernardes, M.F.F. *et al.* A perspective on the potential risks of emerging contaminants to human and environmental health. *Environ Sci Pollut Res* 22, 13800–13823 (2015). https://doi.org/10.1007/s11356-015-4896-6

[12] Kolpin, D.W., et al., 2002. "Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams, 1999-2000: A National Reconnaissance." *Environmental Science and Technology*. 36: 1202-1211.

[13] *Id.*

[14] *Id.*

[15] *Id.*

[16] *Id.*

[17] *Id.*

[18] *Id.*

[19] *Id.*

[20] *Id.*

[21] *Id.*

[22] *Id.*

[23] *Id.* at 1209.

[24] Kolpin, D.W., et al., 2002. "Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams, 1999-2000: A National Reconnaissance." *Environmental Science and Technology*. 36: 1202-1211.

Since 2002, the USGS has continued to investigate the presence of contaminants in the nation's water and their interactions with the environment. Earlier in 2021, USGS researchers found that varying amounts of pesticide transformation (degradation) products were present in 90% of the small streams in mostly urban basins that were sampled, and parent pesticides were present in 95% of those streams sampled in varying amounts.[25] However, the researchers acknowledged that the understanding of transformation products and their occurrence and potential toxicity in aquatic ecosystems remains limited.[26] In this study, the pesticide atrazine was the most frequently detected, in more than half of the samples.[27]

Aquatic and Environmental Health Impacts

For many CECs, the toxicological effects, or potential toxicological effects, are still being studied. The 2002 USGS study researchers found that, when exposed to organic wastewater contaminants (OWCs), "acute effects to aquatic biota appear limited because of the low concentrations occurring in the environment."[28] Measured concentrations for this study were generally low and rarely exceeded benchmark levels such as drinking-water guidelines, drinking-water health advisories, or aquatic-life criteria. However, they noted that "chronic effects from low-level environmental exposure to select OWCs appear to be of much greater concern.[29] The 2002 USGS researchers' report cites a number of studies in which long-term, chronic impacts to aquatic and environmental health have been demonstrated as a result of exposure to CECs.[30]

Over time, USGS researchers have identified toxicological or endocrine effects on aquatic and environmental health. This USGS research has included studies of developing anti-microbial and anti-biotic resistance at beaches and coastal areas,[31] mercury and PCB (polychlorinated biphenyl) contamination of fish in the southeastern U.S.,[32] endocrine disrupting chemicals from wastewater effluent resulting in altered (cancerous, reduced sized, intersex) reproductive organs in fish,[33] and the bioaccumulation of pharmaceuticals and other wastewater effluent contaminants in earthworms from agricultural soil partially comprised with biosolids.[34]

Over the past few years, there has been increased media attention around the presence of plastics (microplastics and plastic pellets) in our waterways. Recent research suggests that some aquatic species might ingest microplastics, but whether there are long-term impacts needs more study.[35]

Human Health Impacts

Currently, the potential acute and chronic effects of many CECs on human health are not clearly understood. As demonstrated above, however, research is developing that has identified acute or chronic effects on other studied species. Contaminants in water can enter the body through several pathways, including ingestion,

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[25] Mahler, B.J. et al., "Inclusion of Pesticide Transformation Products Is Key to Estimating Pesticide Exposures and Effects in Small U.S. Streams." *Environmental Science & Technology*. 2021. *55* (8), 4740-4752.
[26] *Id.*
[27] *Id.*
[28] Kolpin, D.W., et al., 2002. P. 1208.
[29] *Id.*
[30] *Id.*
[31] Fogarty, L.R., et al., 2003. "Abundance and Characteristics of the Recreational Water Quality Indicator Bacteria *Escherichia coli* and Enterococci in Gull Faeces." *Journal of Applied Microbiology*. 94: 865-78.
[32] Hinck, J.E., et al., 2008. "Chemical Contaminants, Health Indicators, and Reproductive Biomarker Responses in Fish from Rivers in the Southeastern United States." *Science of the Total Environment*. 390:538-57.
[33] Hinck, J.E., et al., 2008, Vajda, A.M., et al., 2008.
[34] Kinney, C.A., et al., 2008. "Bioaccumulation of Pharmaceuticals and other Anthropogenic Waste Indicators in Earthworms from Agricultural Soil Amended with Biosolid or Swine Manure." *Environmental Science and Technology*. 42: 1863-70.
[35] Boechler, B.R., Granek, E.F. et al. 2019. "Microplastic occurrence and effects on commercially harvested North American finfish and shellfish: Current knowledge and future directions." *Limnology and Oceanography Letters*.

surface contact, and inhalation of vaporized water. Pregnant women, infants and children, and individuals with suppressed immune systems may be more at risk for negative health consequences from toxic contaminants.

The 2002 USGS study noted that there is little understanding of the potentially toxic interactive effects of complex mixtures of CECs in the environment.[36] Several compounds included among the targeted CECs in the 2002 USGS study are noted to break down into other constituents over time.[37] As a result, the study authors called for increased research into the health effects of individual CECs, mixtures of these compounds, and degradants of certain compounds.[38]

In 2008, USGS released a national reconnaissance study that identified the presence of CECs in untreated drinking water sources that were sampled across the United States.[39] Sixty-three of the 100 targeted CECs were detected in at least one water sample (taken from 74 untreated drinking water source locations.)[40] The researchers noted that the study data would help prioritize and determine the need, if any, for future occurrence, fate and transport, and health-effects research for subsets of the studied chemicals and their degradates most likely to be found in water resources used for drinking water in the United States.[41] Even though there may be no immediate health effects at the tiny concentrations in which these substances have been detected, concern has been expressed by some in the research community about the potential human health impacts of long-term, low-level exposures to these substances.[42]

One large class of substances —Per- and Polyfluoroalkyl substance (PFAS) chemicals—has received increased attention in recent years, and the EPA considers some to be CECs.[43] According to the EPA, studies of PFAS have found immunological, developmental, reproductive, hepatic, renal, and carcinogenic effects, among others.[44] A recent Harvard study found evidence that PFAS exposures may increase the severity of the coronavirus in individuals.[45]

Clean Water Act Framework for Addressing Surface Water Pollutants

The *Clean Water Act* (CWA)[46] is the federal government's primary statutory tool for protecting the quality of the nation's surface waters. The 1972 CWA identified two national goals: the elimination of discharge of pollutants into navigable waters by 1985; and, wherever attainable, the achievement of 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

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[36] Kolpin, D.W., et al., 2002. "Pharmaceuticals, Hormones, and Other Organic Wastewater Contaminants in U.S. Streams, 1999-2000: A National Reconnaissance." *Environmental Science and Technology*. 36: 1202-1211.
[37] *Id.*
[38] *Id.*
[39] Focazio.K.J., et al., 2008. "A National Reconnaissance for Pharmaceuticals and Other Organic Wastewater Contaminants in the United States – II) Untreated Drinking Water Sources." *Science of Total Environment*. 402: 201-206.
[40] *Id.*
[41] *Id.*
[42] Tee L. Guidotti, MD, MPH, Rapid Public Health Policy Response Project. 2008. *Pharmaceuticals are in the Drinking Water: What Does it Mean?* George Washington University School of Public Health and Health Services. (Dr. Guidotti was a majority witness at the September 18, 2008 Committee on Water Resources and the Environment Hearing on "Emerging Contaminants in U.S. Waters." Dr. Guidotti provided a copy of his referenced report, cited here, to the Subcommittee as an attachment to his written testimony.)
[43] *See e.g.*, U.S. Environmental Protection Agency. *Emerging Contaminants and Federal Facility Contaminants of Concern.* Last accessed at https://www.epa.gov/fedfac/emerging-contaminants-and-federal-facility-contaminants-concern.
[44] *See* U.S. Environmental Protection Agency. "Basic Information on PFAS." Accessed at https://www.epa.gov/pfas/basic-information-pfas.
[45] Grandjean, P., et.al. 2020. "Severity of COVID-19 at elevated exposure to perfluorinated alkylates." PLOS ONE. Accessed at https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0244815.
[46] 33 U.S.C. §1251 et seq.

water by July 1, 1983 (also known as "swimmable and fishable waters").[47] While the nation has made great progress towards these goals, neither has been met yet in all waters.

The CWA includes two mechanisms through which to protect surface waters: technology-based control standards and water quality-based control standards. Technology-based standards, through the development and use of effluent limitation guidelines (ELGs), were intended to result in the complete elimination of the discharge of pollutants into surface waters by 1985, through a process of increasingly strict technology-based control standards over time. Water quality standards are intended as a backstop that would entail a strengthening of effluent guidelines until a water body is no longer listed as impaired.

Effluent Limitation Guidelines:

ELGs are national standards that the EPA develops under the CWA on an industry-by-industry, pollutant-by-pollutant basis.[48] ELGs are based on the performance of treatment and control technologies and intended to represent the greatest pollutant reductions from a given industry that are economically achievable and technically feasible. ELGs are not determined by water quality or toxicity levels in a waterbody or based on any health standard or criteria. This effluent guideline approach was envisioned by the 1972 CWA to be an interim step, with the eventual goal of an elimination of all pollutant discharges.

Since 1972, EPA has established ELGs for 59 industrial categories.[49] The ELG regulations apply to about 40,000 facilities that discharge directly to the nation's waters, 129,000 facilities that discharge to municipal sewage treatment plants, and certain construction sites.[50] The Agency periodically reviews the existing ELG regulations and updates them, as appropriate.[51] EPA considers four main factors when prioritizing existing ELGs for possible revision, including the performance of applicable and demonstrated wastewater treatment technologies, process changes, and pollution prevention strategies to reduce pollutants in an industrial category's wastewater; the costs (economic achievability) of demonstrated wastewater treatment technologies, process changes, and pollution prevention alternatives; the amount and types of pollutants in an industrial category's discharge; and the opportunity to promote technological innovation or to eliminate inefficiencies or impediments to pollution prevention.[52] EPA last updated limits for 39 of the current 59 industries across the nation more than 30 years ago, and 17 of those limits date back to the 1970s.[53]

If a sector has no specific ELG associated with it, it is up to the permit writer to establish site-specific technology-based limits to control the discharge. Under Section 304(b) of the CWA, EPA must identify and generate ELGs for those industry sectors that generate more than trivial amounts of toxic or "nonconventional" pollutants.

Pursuant to Section 307(a) of the CWA, EPA has identified a class of toxic pollutants known as "priority pollutants." EPA must develop ELGs for these substances. Currently, 126 specific toxic substances are listed on the priority pollutant list under the CWA (this list was generated from 65 pollutants and classes of pollutants.)

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[47] *Id.*
[48] 33 U.S.C. § 1311.
[49] *See* https://www.epa.gov/eg/effluent-guidelines-plan.
[50] *See id.*
[51] *See id.*
[52] *See id.*
[53] *See id.*

Water Quality Standards:

In those instances where a CWA permit with technology-based discharge limitations (or secondary treatment limits for treatment works) is not sufficiently stringent to ensure that state-established ambient water quality standards will be met for the water body where the discharge is located, the CWA requires the implementation of more stringent, water quality-based effluent (discharge) limits in the permit to ensure that water quality standards for the waterbody will be met.[54]

Following implementation of all relevant technology-based controls (based on the relevant effluent guidelines) and permit limitations for all point source dischargers on a water body, if the water body's water quality standards are not being met for a water quality parameter, the CWA requires the development of water-quality based discharge limits for those chemicals or pollutants that are causing the impairment of the waterbody. However, unlike the technology-based effluent limits, water quality-based limits do not require a cost-benefit analysis but are focused on establishing specific discharge limits for pollutants that are known to cause water quality impairments to receiving waters.

In summary, the framework of the CWA provides a process for the identification of specific water bodies where the technology-based limits fail to achieve water quality standards for identified pollutants, as well as a mechanism for imposing more stringent discharge limits on dischargers of those identified pollutants that, if properly implemented, should result in the water body meeting a state's water quality standards.

Federal Action

There has recently been Congressional interest in addressing one group of CECs—PFAS—and in using other statutes to do so. PFAS are a broad class of chemicals with diverse properties that are present in a wide variety of industries including first responder services and safety equipment, aerospace, energy, automotive, medical devices, pharmaceuticals, telecommunications, textiles, and electronics.[55] Examples of products that might contain PFAS include medical products and garments, coatings for medical devices, semiconductors, solar panels, high-performance electronics, and fuel-efficient technologies.[56]

In the 117th Congress, the House passed the Committee on Energy and Commerce's H.R. 2467, the *PFAS Action Act* on July 21, 2021 by a final vote of 241-183.[57] The legislation directs the EPA to designate the PFAS perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) as hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980.[58] Within five years, the EPA must determine whether the remaining PFAS substances should be designated as hazardous substances.[59] The legislation would also require EPA to make a determination whether PFAS should be designated as toxic pollutants under the CWA. If the EPA were to designate PFAS as toxic, then the agency would be required to establish standards to limit discharges of PFAS from industrial sources into waters of the United States.[60] In addition, the

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[54] 33 U.S.C. 1312

[55] Environmental Protection Agency. "Basic Information on PFAS." Accessed at https://www.epa.gov/pfas/basic-information-pfas; *See also:* Environmental Protection Agency. "EPA's Per- and Polyfluoroalkyl Substances (PFAS) Action Plan". Feb. 2019. *Available at* https://www.epa.gov/sites/default/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf.

[56] *Id.*

[57] *See* https://clerk.house.gov/Votes/2021217; please note the Committee on Transportation and Infrastructure received a referral on this bill but did not mark it up in Committee.

[58] See *PFAS Action Act of 2021*. Accessed at https://www.congress.gov/bill/117th-congress/house-bill/2467/text

[59] *Id.*

[60] *Id.*

legislation would also require EPA to issue a national primary drinking water regulation for PFAS that, at a minimum, includes standards for PFOA and PFOS.[61]

Among other requirements, the legislation mandates that EPA must issue a final rule adding PFOA and PFOS to the list of hazardous air pollutants, test all PFAS for toxicity to human health, and regulate the disposal of materials containing PFAS.[62] Finally, H.R. 2467 would provide incentives to address PFAS, such as grants to help community water systems treat water contaminated by PFAS.[63]

Other instances where Congress has addressed PFAS-related issues include the National Defense Reauthorization Act for Fiscal Year 2021 (NDAA 2021).[64] This law included several provisions to address PFAS concerns and over $200 million in funding for studies and research and development on PFAS related issues, such as $50 million to develop technologies for the disposal of PFAS and remediation of environmental contamination[65] and $15 million to continue the Center for Disease Control and Agency for Toxic Substances and Disease Registry joint study on the health effects of exposure to PFAS.[66] Further, appropriations for Fiscal Year 2020 required EPA to report to Congress on addressing PFAS cleanup and provided $2.8 billion for the Clean Water and Drinking Water State Revolving Funds, including $20 million for state-level PFAS clean up.[67]

In addition, EPA recently announced planned actions in its Effluent Guidelines Program Preliminary Plan 15.[68] As part of Preliminary Plan 15, the EPA plans on initiating rulemakings on several new ELGs. One ELG would address the Organic Chemicals, Plastics, and Synthetic Fibers (OCPSF) category to address the discharge of PFAS substances from facilities that manufacture PFAS.[69] The EPA would also initiate a new ELG rulemaking for the Metal Finishing category to address PFAS discharges from the chromium plating operations.[70] In addition, EPA would initiate detailed studies of PFAS discharges from the Landfills and Textile Mills categories.[71]

WITNESSES

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[61] *Id.*
[62] *Id.*
[63] *Id.*
[64] P.L.116-283, *The William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021.*
[65] Section 334, *Supra note 64.*
[66] Section 337, *Supra note 64; See also: the FY 2020 Joint Explanatory Statement, available at* https://appropriations.house.gov/sites/democrats.appropriations.house.gov/files/HR%201865%20-%20Division%20D%20-%20Interior%20SOM%20FY20.pdf.
[67] P.L. 116-94, *the Consolidated Appropriations Act of 2020*
[68] Preliminary Effluent Guidelines Program Plan 15, 86 Fed Reg. 51155 (proposed September 14, 2021).
[69] *Id.*
[70] *Id.*
[71] *Id.*

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