RE: Docket ID No. EPA-HQ-OECA-2022-0981

February 3, 2023

To whom it may concern:

We are writing in response to the call for public comments on the EPA's National Enforcement and Compliance Initiatives for Fiscal Years 2024-2027 (Docket ID No. EPA-HQ-OECA-2022-0981), with two recommendations:

1. The EPA should **continue to focus on significant non-compliance** (SNC) in the National Pollutant Discharge Elimination System (NPDES) Program

2. However, it should **broaden the scope of this NECI** to include identifying and improving compliance among facilities which have **failed to obtain a required permit** under this program.

Collectively, we have extensive experience working on problems of environmental regulation, particularly in the context of the Clean Water Act, and often in partnership with EPA and state environmental protection agencies. Through the Regulation, Evaluation, and Governance Lab (RegLab) at Stanford University, much of our work has focused on understanding how a data-driven approach to policy making and implementation can help these agencies use their often very limited resources as efficiently as possible to improve both compliance overall as well as reduce disparate impacts of significant non-compliance on overburdened and vulnerable communities.

Combining both rigorous academic research and close, practice-driven partnerships with state & federal environmental regulatory agencies, our team has developed substantial expertise with challenges inherent in protecting the waters of the United States through the Clean Water Act, as well as the opportunities for doing so effectively. This work has directly contributed to these efforts in several ways:

- Assisting the EPA's Office of Enforcement and Compliance Assistance to develop a "Best Practices" Compendium for reducing the SNC rate under the Clean Water Act based on interviews of state, regional, and federal environmental regulators as part of the efforts around the current SNC-focused NCI.[1]

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[1] Developing Best Practices for Clean Water Act Enforcement, Stanford Law School Practicum (2021): https://law.stanford.edu/education/only-at-sls/law-policy-lab/practicums-2020-2021/developing-best-practices-for-clean-water-act-enforcement/

- Working in the context of Maumee River Basin, our team developed models for attributing the sources of phosphorus pollutants with high spatial and temporal granularity, enabling regulators to develop a better understanding of the specific contributors to eutrophication.[2]

- Using high-frequency satellite imagery and modern computer vision algorithms, our team demonstrated the ability to accurately detect in nearly real time spreading of manure on frozen or snow-covered fields, a practice that poses significant risks to surrounding waterways.[3]

- Investigating how seemingly innocuous design decisions in predictive models seeking to support the EPA's current SNC-focused NCI efforts can have adverse distributional effects on environmental justice concerns: for instance, a focus on reducing non-compliance rates rather than the scale of pollution exceedance can lead to an under-focus on harder-to-fix problems that are concentrated in vulnerable and overburdened communities.[4]

- Examining how electronic pre-deadline reminders through the NetDMR platform can reduce SNC from DMR nonreporting through a yearlong randomized controlled trial: this experimental intervention identified a low-cost opportunity to successfully increase submissions and reduce the number of permittees for whom EPA and state agencies must consider more costly methods to induce compliance.[5]

Our team has also been a leading voice in the conversation around the role for data science and machine learning in facilitating environmental enforcement and improving compliance,[6,7] and we have extensively discussed how the rapid increase in not only the quantity, quality, and availability of satellite imagery but also the sophistication of methods to draw useful inferences from this raw imagery has the potential to revolutionize environmental regulation. Our work on land application of manure from concentrated animal feeding operations provides one case study, but these technologies can also be readily applied to other compliance questions, such as detecting sanitary sewer overflows, monitoring wetlands conversion, or identifying facilities

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[2] Wei, Zihan, et al. Integrating Water Quality Data with a Bayesian Network Model to Improve Spatial and Temporal Phosphorus Attribution: Application to the Maumee River Basin. *ESS Open Archive*. 2022. https://essopenarchive.org/doi/full/10.1002/essoar.10512828.1

[3] Chugg, Ben, et al. Detecting Environmental Violations with Satellite Imagery in Near Real Time: Land Application under the Clean Water Act. *Proceedings of the 31st ACM International Conference on Information & Knowledge Management*. 2022. https://dl.acm.org/doi/abs/10.1145/3511808.3557104

[4] Benami, Elinor, et al. The distributive effects of risk prediction in environmental compliance: Algorithmic design, environmental justice, and public policy. *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*. 2021. https://dl.acm.org/doi/10.1145/3442188.3445873

[5] Benami, Elinor, et al. Drop a Line, Submit on Time? Randomized Tailored Reminders Improve Pollution Reporting Timeliness. Under Review. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4355984

[6] Handan-Nader, Cassandra, Daniel E. Ho, and Larry Y. Liu, Deep Learning with Satellite Imagery to Enhance Environmental Enforcement, in Data Science Applied to Sustainability Analysis. Elsevier, 2021. https://purl.stanford.edu/bh005pt4088

[7] Benami, Elinor, Daniel E. Ho, and Anne McDonough. "Innovations for environmental compliance: Emerging evidence and opportunities." *SIEPR policy brief, Stanford Institute for Economic Policy Research*. 2020. https://siepr.stanford.edu/publications/policy-brief/innovations-environmental-compliance-emerging-evidence-and-opportunities

which may be discharging into the waters of the United States but have not obtained a permit under the NPDES program.

With these novel tools at hand, EPA has the opportunity to not only improve the efficiency of their existing compliance efforts, but explore directions that previously would have been too resource-intensive to consider. We believe that one particularly important direction in that regard involves an increased focus on areas where a lack of reporting might obscure considerable adverse environmental impact. In her seminal book on the topic, *Next Generation Compliance*,[8] EPA Senior Advisor and former enforcement administrator Cynthia Giles describes how lack of reporting results in a situation where "non-compliance with environmental rules is worse than you think." While Discharge Monitoring Report (DMR) non-receipt among NPDES permittees is a sizable component of this problem, these cases represent only the "known unknowns" and fail to account for facilities that have not obtained a permit and are therefore not tracked within NPDES at all. These concerns are far more than merely administrative in nature — non-reporting and unpermitted facilities may be causing environmental harms that are masked from the EPA's enforcement and compliance efforts by the lack of available reporting data. This lack of visibility also creates an overly-optimistic view of the baseline level of compliance that can, in turn, lead to under-investment in compliance and enforcement initiatives, thereby making evasion of regulatory requirements easier in a pernicious feedback loop.[9]

Given the resource constraints that necessitate a heavy reliance on self-monitoring and reporting in the NPDES program, the potential for strategic non-reporting to mask known significant violations by some permittees should not be discounted, and the most extreme form of non-reporting is evading the permitting requirements themselves. This problem is not merely theoretical: In 2011, EPA estimated that approximately 60% of concentrated animal feeding operations are unpermitted under the NPDES program.[10] Likewise, in a 2013 newsletter, the Chattahoochee Riverkeeper claimed to find 400 unpermitted emitters in their watershed alone,[11] and at a 2020 Stormwater Roundtable, EPA Water Enforcement Environmental Engineer Sean Ireland described efforts to link NPDES permit data to business databases, with an initial pilot finding approximately half of 2,324 facilities manually reviewed with aerial imagery lacked a needed permit or no exposure certification.[12]

The scale of this problem, its potential for sizable environmental harms, and the risk of disproportionately impacting over-burdened communities leads us to strongly recommend that the EPA broaden its SNC-focused NECI to include identifying and bringing into compliance these unpermitted emitters. The status quo of fixating only on effluent violations when they are

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[8] Giles, C. J. *Next Generation Compliance: Environmental Regulation for the Modern Era*. Oxford University Press. 2022. https://www.nextgencompliance.org/

[9] Ho, Daniel E. and Colleen Honigsberg, Constructing Environmental Compliance, *Yale Journal of Regulation* (2023) (review of Cynthia Giles, Next Generation Compliance: Environmental Regulation for the Modern Era, New York: Oxford University Press, 2022).
https://www.yalejreg.com/nc/symposium-giles-next-generation-compliance-06/

[10] Environmental Protection Agency. *National pollutant discharge elimination system (NPDES) concentrated animal feeding operation (CAFO) reporting rule*. Fed. Regist. 76, 65431–65458 (2011).

[11] "New Campaign Focuses on Industrial Stormwater Pollution." Chattahoochee Riverkeeper RiverCHAT Newsletter, Summer 2013. https://chattahoochee.org/wp-content/uploads/2018/07/CRKSummer13w.pdf

[12] Ireland, Sean. *Targeting the Unknown*. Presentation to 20/20 Stormwater Roundtable. Feb. 2020. https://www.acwa-us.org/wp-content/uploads/2020/02/Ireland-EPA-Targetting-the-Unknown.pdf

reported is reminiscent of the proverbial drunkard looking for keys under the street lamp because that is where the light is. Bringing these facilities out of the dark does pose challenges, but the recent growth of data and technologies that can help EPA identify them efficiently and systematically makes this expanded view of NPDES compliance not only feasible but compelling for those being harmed by both unpermitted and non-reporting facilities that continue to hide in the shadows.

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