To: Stormwater Management Joint Task Force
From: Bayou City Waterkeeper; Usman Mahmood, Clara Goodwin, Apurva Gunturu
Date: June 26, 2025
Subject: Policy Recommendations for Major Amendments to MS4 Permit for City of Houston, Harris County, and Harris County Flood Control District (TPDES Permit #WQ0004685000)

Executive Summary

The Texas Pollutant Discharge Elimination System (TPDES) permit number WQ0004685000 regulates the Municipal Separate Storm Sewer System (MS4) managed by the City of Houston (COH), Harris County (HC), and Harris County Flood Control District (HCFCD) collectively known as the Stormwater Management Joint Task Force (JTF). This permit has been administratively continued since 2014 without major amendments, despite increasing changes in the region's development patterns, climate conditions, and environmental challenges.

The latest JTF Year 16 Annual Report (Annual Report) demonstrates that the current permit may be inadequate for addressing stormwater management in the Greater Houston region and requires comprehensive amendments.

Background

The Texas Commission on Environmental Quality (TCEQ) has administratively continued the Houston Area MS4 permit since 2014. Current monitoring and violation data in the Annual Report highlights limits in the current permit that may be leading to increased trash in waterways, inadequate industrial pollution control, lack of green infrastructure integration, insufficient community input and education, and permit terms that are unable to reflect current best practices for the changing water landscape of the region.

- ***Trash Pollution in Waterways***: The May 2024 derecho windstorm and Hurricane Beryl resulted in immense unanticipated damage and debris (JTF Annual Report, Part 2: Harris County, Preface). In the months immediately following the May derecho windstorm and Hurricane Beryl, Harris County collected approximately 888,184 cubic yards of debris and HCFCD collected an additional 7,904 cubic yards. The storms were treated as anomalies in the Annual Report, with neither permit nor budget updates proposed by any JTF members (Id. JTF Annual Report, Part 2: Harris County, Preface).
    - The JTF should recognize that climate change is making severe weather events the new normal by requiring updated infrastructure and permit standards to anticipate and manage increased debris loads. Harris County's inspections team was reassigned to disaster recovery operations for approximately 106 days following Hurricane Beryl, demonstrating how extreme weather events can compromise routine compliance activities (Preface, Part 2: Harris County).
- ***Industrial Pollution Control:*** The Harris County Pollution Control Services Department (PCS) stormwater inspectors conducted 130 industrial stormwater inspections in the

unincorporated area of Harris County during the reporting period. Of these inspections, 51 resulted in violation notices, a rate of nearly 40% for industrial pollution entering the MS4 system (JTF Annual Report, Part 2: Harris County, I-9). Similarly, COH issued 3,565 Notices of Violation and 12 citations from 7,125 inspections of construction sites, a 50% violation rate. (JTF Annual Report, Part 1: City of Houston, VI-I). The high violation rates suggest that current standards may be insufficient for preventing industrial pollution entering waterways.

- ***Green Infrastructure Integration:*** The Harris County Flood Control District has initiated several Green Infrastructure (GI) projects since 2014, including development of comprehensive design guidelines, installation of rain gardens and floating vegetated islands, and investigation of GI practices in backslope swale systems. However, most of these initiatives have not progressed to full implementation or have undergone insufficient data collection to determine their impacts on water infrastructure (JTF Annual Report, Part 3: HCFCD, I-3, I-4). Additionally, various bacteria reduction initiatives and a HCFCD contract with a third-party vendor to analyze and determine potential alternative designs to the HCFCD Standard Floatable Collection Detail have remained pending for multiple years. (Id. at I-5, VI-1, VI-2).
    - Members of the JTF have successfully completed highly valuable and popular GI projects in the past, e.g., Exploration Green, the Yolanda Black Navarro Buffalo Bend National Park, and the Bagby Street Reconstruction Project, all of which have metrics reporting successful flood prevention and improved public quality of life. The pending initiatives mentioned in the Annual Report demonstrate unrealized potential for GI integration.

- ***Community Input and Education***: The JTF hosts a number of public engagement and education efforts. These efforts primarily come from distribution of literature and operating hotlines for community complaints (JTF Annual Report, Part 1: City of Houston, VI-2. Harris County, IV-1. HCFD, I-6, IV-1, IV-2). Literature includes bilingual brochures on topics such as prevention of littering, public reporting of illicit discharges, proper management and disposal of used oil and toxics, proper management of pesticides and fertilizers, construction activities, and development requirements. The Annual Report indicates that some percentage of violation complaints submitted by the public were investigated.
    - The JTF does not appear to have public engagement on the annual Stormwater Management Plan (SWMP) updates or solicits public feedback on permit implementation. The public would benefit from understanding how their input on water quality problems and priorities can influence permit updates and enforcement priorities. For example, if communities consistently report certain types of illicit discharges or identify pollution hotspots, that information should feed into permit amendments that address those specific issues.

- ***Outstripping Current Permit Terms***: Measurable goals set for SWMP inspections and cleanings were set in 2010 by the permit. During the most recent reporting period, the

JTF members far outstripped the requirements set in the 2010 SWMP. The COH examined, cleaned, or repaired over 101,886 storm sewers inlets and manholes, exceeding the goal of 60,000 inspections. (JTF Annual Report, Part 1: City of Houston, I-1.) Moreover, COH inspected 23% of stormwater quality sites, exceeding the required 10% inspection rate. (Ibid.) The discrepancies in the permit requirements and maintenance activities reported by the JTF demonstrate that the minimums set by the 2010 permit are too low and not reflective of current maintenance operations.

- ***Contamination from Ship Channel dredging operations entering the storm sewer system*:** The Port of Houston and the Army Corps of Engineers maintain multiple dredge material placement areas (DMPAs) to contain the vast quantities of dredged material generated by the Houston Ship Channel's (Ship Channel) operations and maintenance activities, as well as ongoing expansion projects (i.e. Project 11 and Project 12). These DMPAs are open bermed areas where dredge material is pumped as a slurry. The solids are then allowed to settle out while the runoff and overflow is discharged through outfalls into flood control ditches, the storm sewer system, or directly into bayous and the Ship Channel.
    - Sampling of sediments in the Ship Channel conducted by the Army Corps of Engineers in 2012, 2018, 2020, and 2023 has found concerning levels of arsenic, semi-volatile organic compounds, PAHs, dioxins and furans, zinc, silver, and copper, and other heavy metals. Community soil and water sampling in right-of-ways surrounding DMPAs in Pleasantville, Galena Park, and Jacinto City also found elevated concentrations of contaminants in violation of EPAs Regional Screening Levels for residential soil. As these DMPAs have had dredged material placed in them in the past, we believe that these pollutants are being released from the DMPAs through their discharge.
    - Discharge from these specific placement areas is released directly into the Harris County Flood Control ditch H102-00-00 (Turkey Run Gully), which is a part of the Harris County MS4 system covered by the permit, and from there to Hunting Bayou. Beyond containing alarming levels of toxic pollutants, these discharges are classified as discharges of dredged material and are non-stormwater discharges. Such discharges are prohibited from entering into the storm sewer system and may be violating the MS4 permit.

Policy Recommendations

The JTF and TCEQ should work together to identify and request permit components that may need comprehensive revisions. Outdated permit components apparent in the most recent Annual Report offer the requisite "good cause" that necessitates a permit amendment under the Texas Administrative Code § 305.62(d). The following recommendations provide potential improvements to the permit where updates may be required.

1. **Enhanced trash and floatables management.** The current permit lacks adequate requirements for structural controls to reduce trash and floatables pollution. The permit should increase requirements for trash pollution management by:

    a. **Requiring installation of specific structural controls** such as catch basin inserts, end-of-pipe nets, floating trash traps, and vortex separation systems at MS4 outfalls. Such controls can anticipate higher levels of trash flow caused by increasingly intense storms like the May 2024 derecho and Hurricane Beryl.

    b. **Implementing quarterly performance-based inspection, maintenance, and reporting** requirements to ensure controls remain effective and enhance permit standards.

    c. **Requiring extra structural controls** at high-trash locations such as areas and venues where major public events are hosted.

    d. **Requiring trash collection reporting to use standardized metrics**, such as wet weight measurements, to enable consistent tracking and evaluation across all JTF members.

    e. **Establishing baseline assumptions for extreme weather debris management** incorporating recent storm data, including contingency plans for maintaining inspection schedules during extended disaster response periods.

2. **Strengthened industrial pollution control**. Current standards may be insufficient for preventing industrial pollution from entering waterways. The permit should be updated to address industrial pollution by:

    a. **Incorporating clearer expectations for pollution prevention at industrial facilities**, including requirements for specific structural controls such as oil-water separators, ponding, and filtration devices.

    b. **Requiring implementation of sector-specific Best Management Practices (BMPs)** tailored to industrial sectors, including spill prevention and containment plans. BMPs for industry plants along the Ship Channel should prioritize controls that keep toxic chemicals out of stormwater, given their proximity to impaired waters and vulnerability to storms.

    c. **Expanding inspection and enforcement terms** by changing from predictable annual schedules to flexible, risk-based inspection schedules utilizing EPA's industrial stormwater inspection guidance, and updating protocols to incentivize timely correction of deficiencies.

    d. **Requiring public education** on stormwater pollution prevention targeting sector-specific commercial and industrial audiences.

3. **Accelerated green infrastructure integration.** The permit should incorporate and incentivize timely implementation of GI integration by:

    a. **Incorporating EPA's 2022 Compendium of MS4 Permitting Approaches** on green infrastructure implementation, which provides permit language on post-construction stormwater volume control standards using practices such as bioretention, infiltration, and stormwater harvesting and reuse.

    b. **Incorporating GI initiatives into annual budgets** to ensure complete implementation and accountability.

    c. **Establishing post-construction stormwater volume control standards** to require retention of a specific storm event through green infrastructure practices.

    d. **Setting specific goals for GI projects in impaired waters** to prioritize areas with greatest environmental need.

4. **Enhanced community engagement and input**. The permit should strengthen avenues for meaningful community engagement by:

    a. **Providing guidelines for conducting robust community outreach**, utilizing environmental screening tools to identify and prioritize outreach in disproportionately impacted communities, including those near the Ship Channel.

    b. **Holding accessible workshops in multiple languages** to gather input on priorities. The JTF should expand its bilingual initiatives to include hosting workshops presenting key information on the MS4 program and inviting public input on priorities.

    c. **Engaging and soliciting public feedback on annual SWMP updates** to provide communities opportunities to identify emerging problems, and evaluate effectiveness of current strategies, through annual public meetings or regular surveys.

5. **DMPA contamination monitoring and control.** The JTF's SWMP should identify and list all outfalls from DMPAs into the storm sewer system. Specific provisions should include:

    a. **Requiring testing to screen for toxic pollutants** that pose human health risks at each DMPA outfall. As these outfalls do not have continuous flow, this may require wet weather screening conditions.

        - Testing should include: Volatile Organics, Semi-Volatile Organics (including hexachlorobutadiene, hexachlorocyclopentadiene), PAHs (individual and total PAHs), ammonia, dioxins and furans (including 2,3,7,8-TCDD TEQ and Total TEQ), PFOs/PFAs, PCBs (including total PCBs as well as PCB 77, PCB 126 and PCB 169), pentachlorophenol,

arsenic, cadmium, chromium, CR+6, thallium, zinc, copper, silver, mercury, and other heavy metals, pesticides, petroleum hydrocarbons, cyanide, and moisture content.

b. **Including special discharge monitoring requirements** for each MS4 outfall that carries effluent from DMPAs to waters of the United States, including outfalls to Huntington Bayou from H102-00-00 and to the Ship Channel from G117-00-00, to ensure the MS4 system is not contributing toxic pollutants and heavy metals to the Galveston Bay System.

c. **Incorporating BMPs for dredged material to reduce constituents** that show elevated concentrations or may impact surface water quality standards. This may require collaboration with the Port of Houston to install control technology at DMPA outfalls to ensure there is no degradation in surface water quality.

Conclusion

The annual report highlights permit terms that may be inconsistent for current maintenance, infrastructure, enforcement, and outreach needs. While the JTF has shown dedication to protecting water quality through efforts that often exceed current permit requirements, the regulatory framework should evolve to match both the scale of current operations and the growing environmental challenges facing the Greater Houston region.

The recommended amendments represent an opportunity to strengthen the collaborative partnership between COH, HC, and HCFCD to protect public health and water quality. These enhancements may help ensure our waterways remain clean and accessible.

The permit's effectiveness would be significantly elevated by setting quantitative trash reduction goals, improving documentation and transparency procedures for compliance monitoring, establishing GI integration efforts, expanding public education and outreach requirements to gather community input, and identifying and addressing concerns of non-stormwater pollutants from DMPAs entering the municipal stormwater system. We look forward to working collaboratively with the JTF to implement these improvements and ensure the continued protection of our shared water resources.