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GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



DAN WYANT  
DIRECTOR

March 7, 2013

Mr. Nick Schroeck, Executive Director  
Great Lakes Environmental Law Center  
440 Burroughs Street, Box 70  
Detroit, Michigan 48202

Dear Mr. Schroeck:

SUBJECT: National Pollutant Discharge Elimination System (NPDES)  
Detroit Wastewater Treatment Plant (WWTP)  
Permit No. MI0022802  
Public Comment Response

The purpose of this letter is to respond to the comments in your letter of February 19, 2013, regarding the draft NPDES permit for the Detroit WWTP. The Department of Environmental Quality (DEQ) appreciates the important and useful discussions that took place over the last year regarding the Detroit WWTP and your suggestions for the draft permit. The DEQ believes that your input had an important role in helping establish the conditions and requirements contained in the permit that was issued March 1, 2013.

The DEQ's responses are presented in the format of your comments:

Part 1

**Green Infrastructure**

The DEQ understands your desire to have the Green Infrastructure (GI) program implemented city-wide, and ultimately this may happen. However, the permit is focused on GI requirements in two areas of the city that currently have untreated Combined Sewer Overflows (CSOs). The role of an NPDES Permit is to improve and protect water quality. The impact on water quality by implementing GI within areas of the city that already have their CSOs addressed at a storage/treatment facility (such as a Retention Treatment Basin [RTB]) is far less pronounced because these facilities already control the events where GI is most effective. Therefore, GI requirements have been focused in areas of the city that will provide the greatest impact on water quality with the limited GI funding available. The GI Plan that is required to be submitted by August 1, 2013, will be reviewed and approved as appropriate by the DEQ. The DEQ intends to place the approved plan and subsequent annual progress reports on a DEQ Web site to ease document availability for the public. This Web site will be discussed at the end of this letter, as it also affects other permit provisions besides GI. You asked about the requirements to spend \$3 million dollars per year. This is a requirement of both the previous permit and this new permit, and the requirement to spend this money is not affected by the more specific and detailed GI Plan required this August. However, the approved plan will improve GI implementation.

Part of this GI Plan includes processes for public outreach and public participation in selecting sites and implementing GI practices. Your suggestions for the process are noted. You asked

about demolitions of vacant structures. If these demolitions are based on the approved plan, and will contribute to the management of wet-weather flows, then they can be funded with GI implementation dollars. The DEQ expects that the plan will discuss coordination with other city departments and outside organizations to maximize impact. The decision to use the 2-year – 24-hour storm event in this permit for the storm water removal target was based on previous GI annual reports submitted by the Detroit Water and Sewerage Department (DWSD). This is a commonly accepted design storm to help evaluate GI practices, and represents a large event that is similar to the event used for the design of CSO treatment facilities for the DWSD. You further questioned the permit only specifying a target for storm water reduction to the combined system. The actual enforceable condition for this permit is the implementation dollars spent in accordance with the approved GI Plan. The plan will guide the dollars spent to the most beneficial areas and type of GI projects. As discussed over the last year, implementation of GI is not the endpoint of our CSO requirements in Michigan. The realized benefits of GI will be factored into the adaptive management program for the remaining untreated CSOs, and this (among other factors) will help determine the sizing of grey projects necessary to provide adequate treatment to meet water quality standards. The first-flush basins remain part of the approved Long-Term Control Plan (LTCP) for the 17 CSOs that continue to discharge to the Rouge River, though these projects could change under the adaptive approach. Some states allow the discharge of raw sewage from CSOs as an acceptable endpoint in CSO control. Michigan does not. Over the long term, a cost-effective combination of green and grey infrastructure will most likely be needed to get to Michigan's endpoint. At this stage, the DWSD is quantifying the amount of flow that can be kept out of the system. We understand why a mandated amount of flow reduction to be achieved through GI implementation may be more important in other states that do not require all CSOs to be corrected to meet water quality standards at times of discharge, including disinfection to protect public health.

### **Disconnection of Eaves Troughs and Roof Downspouts**

Disconnection of eaves troughs and roof downspouts is indeed required by state law. The permit condition specified a one-year compliance date from the issuance of the previous permit modification (June 28, 2012), "or as may be otherwise approved by the Department consistent with the permittee's implementation of the Green Infrastructure program." Downspout disconnection programs in other areas of the city are then required after completion of the Upper Rouge CSO tributary area. The permit allows for a demonstration that disconnection is not cost effective, and the DWSD has submitted reports in the past for some of its areas that are already tributary to CSO storage/treatment facilities.

### **Phosphorus Discharges**

The DEQ shares your concern regarding algal blooms in Lake Erie. The DEQ has researched the available information and feels the complex interactions in the Lake Erie ecosystem warrant further study. Phosphorus contributions from multiple sources and the effects of nutrient cycling from aquatic invasive species, such as the quagga and zebra mussels, must be better understood before implementation of costly phosphorus controls is required at the Detroit WWTP.

The DEQ has carefully evaluated the phosphorous contributions from the Detroit WWTP. This evaluation has resulted in the reduction of authorized phosphorus loading from both the wet-weather Outfalls (049A, 050A, and also the future 084A) and the secondary treatment

Outfall 049B. The DEQ believes the seasonal phosphorus limitation of 0.6 milligrams per liter (mg/L) (applicable April through September) and 0.7 mg/L as a monthly average for the remainder of the year at the secondary Outfall 049B will help reduce phosphorus contributions to Lake Erie. These limitations serve multiple purposes: 1) reductions can be achieved without costly capital expenditures at the Detroit WWTP, 2) the reductions can be made using good operational control at the plant while other significant sources of phosphorus are being studied, and 3) they approach the Great Lakes Water Quality Agreement goal of 0.5 mg/L for Lake Erie. The DEQ believes the permit limitations in the Detroit WWTP NPDES Permit will help decrease the overall phosphorus loadings to Lake Erie and encourage other state and national agencies to make similar strides toward this goal.

Michigan will be an active participant under Annex 4 of the Great Lakes Water Quality Agreement. The purpose of this committee will be to better understand phosphorus sources and make recommendations. As sources of phosphorus to Lake Erie are better understood, additional nutrient reductions may be warranted.

In addition to the actions described above, Michigan has already taken the following actions to address nutrients to the Great Lakes:

- Implemented Rule 60 of the Part 4 Water Quality Standards, which requires that nutrients be limited to 1.0 mg/L for the protection of the Great Lakes. The rule allows for more stringent limitations due to nutrient expression or to be consistent with a Total Maximum Daily Load (TMDL).
- Instituted long ago a statewide ban on phosphates in laundry and dishwasher detergents, as well as a more recent ban on phosphorus in residential lawn fertilizer.
- Placed all Concentrated Animal Feeding Operations under permits that require the development of Comprehensive Nutrient Management Plans. Michigan also encourages voluntary Michigan Agriculture Environmental Assurance Program certification for farms.
- Actively required comprehensive Sanitary Sewer Overflow (SSO) and CSO correction programs for over two decades that also help to reduce phosphorus loadings.

### **Environmental Justice Concerns**

The DEQ appreciates your comments regarding environmental justice issues in the City of Detroit, and particularly in southwest Detroit near the WWTP. Be assured that the DEQ takes environmental justice issues seriously. The DEQ will set up and facilitate meetings with the DWSD staff, neighborhood groups, and other stakeholders to address odor and noise issues at the WWTP. The DWSD has agreed to participate in these meetings. This process is under development, but will involve a series of meetings. If needed, we hope to bring other potential sources of odors in the area into this discussion, and work together with the neighborhood to resolve issues. The DEQ believes that more open communication between all the parties involved (the DEQ, the DWSD, other potential sources, residents, concerned groups, and elected officials) can go a long way to help reduce concerns regarding the WWTP. We plan to use some of your suggestions to adequately inform residents of future meetings.

## **Climate Change**

The DEQ acknowledges your comments on climate change. Please note that the DEQ's CSO control requirements offer some flexibility in a changing climate. CSO treatment facilities are designed for complete treatment of a large storm event (typically the 10-year – 1-hour event, currently a 1.8-inch event in southeast Michigan). The WWTP has a peak flow capacity of 1700 million gallons per day (MGD) and this flow is observed several times per year. A possible scenario due to a changing climate could be more frequent and longer use of the CSO treatment facilities and the wet-weather treatment processes at the WWTP. Observations over time can be used to determine if treatment or water quality concerns arise, and these concerns can be addressed in subsequent permits, if needed. Including GI and adaptive management as components of the CSO control program could also help with adaptation to any effects of climate change.

## **Enforcement**

The DEQ is currently developing a Web page on the DEQ-Water Web site that will contain much of the information requested by you and others. As this is in the development stages, it will take some time to set up the Web page and upload the information. The DEQ believes that this Web page will be an important communication tool. Also note that it is likely that all requested pieces of information cannot be provided due to technical or logistical issues. However, these will still be available via the Freedom of Information Act.

Regarding your comment to incorporate provisions of the federal consent order into this permit, the DEQ does not believe that this would be useful or appropriate. Please note that the State has entered an Administrative Consent Order (ACO) with the DWSD. The ACO has up-to-date requirements to address the recent period of noncompliance at the WWTP. The ACO also has penalty provisions and we envision that the ACO will remain in place for several years. Further, as you know; many significant conditions from the ACO were incorporated into the Facility Improvement Program in the NPDES Permit. The ACO, along with this NPDES Permit, provide the DEQ with adequate tools to ensure that the DWSD maintains long-term and sustained compliance with the Clean Water Act (CWA) requirements.

Also note that the DEQ believes this permit is clear, and that all conditions and requirements specified in the permit are enforceable, if necessary, by either the DEQ or the United States Environmental Protection Agency (USEPA).

## Part II

I.a. The water quality effluent limitations for Polychlorinated Biphenyls (PCBs) are less than the quantification level; therefore, control requirements were established consistent with Rule 323.1213 of Part 8, Water Quality-Based Effluent Limit Development For Toxic Substances. Any discharge of PCBs at or above the quantification level specified in the permit (0.2 micrograms per liter (ug/L)) is a specific violation. A maximum monthly average load limit of 0.0002 pounds per day (lbs/day) for Monitoring Point 049F is included in the permit. In addition the permit requires that the facility continue to implement the approved Pollutant Minimization Program (PMP) for PCBs, as outlined in Section I.A.10. of the permit. The PMP requires an annual review and semiannual monitoring of potential sources of PCBs entering the wastewater collection system.

b. The DWSD has supplied data on the mercury discharged from Outfalls 049F and 050A to surface waters. This data was used to develop the LCA (Level Currently Achievable), which are enforceable limits in the permit. The Water Quality Standard (WQS) for mercury is 1.3 nanograms per liter; the LCA process is a USEPA-approved variance from Michigan's WQS.

c. Acute Whole Effluent Toxicity (WET) tests are conducted quarterly and the results are reviewed by the DEQ prior to permit reissuance to determine if the acute toxicity requirements of Rule 323.1219 of Part 8, Water Quality-Based Effluent Limit Development For Toxic Substances, are being satisfied. A review of data submitted by the facility indicates that the facility's effluent does not have the reasonable potential to be acutely toxic to aquatic life. Acute WET testing will continue to be required on a quarterly basis.

d. The quarterly sampling schedule outlined in I.A.1.h. is in place to ensure that quarterly samples collected from Monitoring Point 049F are representative of the facility's effluent. More frequent sampling is required for various parameters, as outlined in I.A.1., to protect water quality. In addition, event-based sampling is required at the CSO RTB Monitoring Points as indicated in I.A.6.

e. The limits for total phosphorus of 0.7 mg/L (monthly average) and 0.6 mg/L (growing season average) apply to secondary treated wastewater at internal Monitoring Point 049B prior to discharge through Outfall 049F to the Detroit River. The 1.5 mg/L total phosphorus limit (monthly average) applies to primary treated wastewater at internal Monitoring Point 049A that discharges intermittently during wet weather through Outfall 049F to the Detroit River. Please refer to the flow diagram in the permit or fact sheet for assistance. These are separate monitoring locations for separate flows that subsequently discharge through Outfall 049F. There is no inconsistency.

f. Please see item (e) immediately above. It appears that there may be some confusion regarding the WWTP flow diagram. Please feel free to contact me if you still have questions.

g. Outfall 050A is currently not disinfected. Providing disinfection for wet-weather flows discharged from Outfall 050A is the reason for constructing the second Rouge River Outfall (RRO-2; future Outfall 084A). Since these flows are not currently disinfected, there is no reason to sample for Total Residual Chlorine (TRC) at this outfall.

h. This is an enforceable condition of the permit. Compliance action can be taken if there is a violation and the discharge is injurious.

II. The DEQ is of the view that control of the remainder of the currently-untreated CSOs (non-core CSOs) using an adaptive management approach is an appropriate way to address the high priority non-core CSOs, and that the 2037 time frame is realistic. This time frame reflects the current and near-term debt load of the DWSD and the financial burden placed on Detroit residents. Please note that though construction of grey projects for non-core CSOs is not required for this and the next permit cycle, it is possible that the financial capability of Detroit residents may improve over time and thus allow for acceleration of the adaptive management program. The permit recognizes the significant progress the DWSD has made in implementing its LTCP. Prior to the start of LTCP implementation in 1996, estimates for untreated CSO discharges from Detroit ranged from 20-25 billion gallons per year (BGY). Upon completion of the RRO-2 in 2019, the "core" CSO correction program will be completed. This will result in 95 percent of the annual average wet-weather flow generated within Detroit being treated and disinfected to meet Michigan's CSO requirements. This high level of control affords the DEQ

the opportunity to shift correction of the remaining 55 "non-core" CSO outfalls that discharge 1-3 BGY of untreated CSO into a flexible adaptive management program that sets correction projects for each subsequent permit cycle (five years). The proposed projects for each permit can be based on lessons learned from previous CSO correction projects, new discharge information regarding frequency and volume, the demonstrated ability of sustainable green infrastructure to reduce storm water flows, and full consideration of updated financial capability. It is important to note that the flexibility provided under the new phased adaptive management approach would not be possible without completion of the RRO-2. The remaining planned screening and disinfection facilities along the Detroit River and the first-flush basins along the Rouge River are still part of the approved LTCP. However, these facilities can be modified under the adaptive management approach, along with using the performance criteria specified for elimination of CSOs, to establish more practical and cost-effective projects necessary to complete the LTCP and provide for adequate treatment of all remaining untreated CSOs.

III. There appears to be some confusion over the purpose of Part 1.C.1, Residual Management. This requirement only applies to the land application of biosolids. It is not intended to address other final biosolids disposal methods like incineration or land-filling. The DWSD submitted a Residual Management Program (RMP) to the DEQ, which was approved on April 22, 2008. The approved plan meets the DEQ's land application program requirements. The DWSD currently uses three methods for final disposal of biosolids: incineration, land-filling, and land application. Note that submittal of a new final solids disposal plan is required under the Facility Improvement Program.

#### Additional General Comments

1. The WWTP site is constrained and cannot cost effectively provide additional secondary treatment capacity. In addition, added secondary capacity could cause operational problems because highly variable flows during wet-weather events could make it difficult to maintain biological activity in the treatment units.
2. Rule 323.1082 of Part 4, Water Quality Standards, states that no more than 25 percent of the receiving water design flow shall be used when determining a wasteload allocation for a toxic substance. The Detroit WWTP receives 12.5 percent due to the extremely limited lateral mixing relative to flow velocity in the Detroit River (i.e., the flows used are those that the facility's effluent actually mixes with, not the whole river). Note that this is 12.5 percent of the 95 percent exceedance flow (the flow that is exceeded 95 percent of the time; i.e., an extreme drought flow equaling 130,000 cubic feet per second [cfs]). These are very conservative low flows. Average flows of the Detroit River are 169,000-202,000 cfs. The background flow used for the Detroit WWTP is 16,250 cfs. This flow is an extremely conservative background flow and is appropriate, given the nature of the Detroit River and the facility's discharge. The limits in the permit are calculated to protect the designated uses, including water quality standards, in the receiving waters (the Rouge and Detroit Rivers). The Fecal Coliform Bacteria limit does not take into account background flows. It is an "end-of-pipe" limit designed to protect public health.
3. The concern with high solids inventories is one of the three significant items the DEQ designed this new permit to address. As presented at the public meeting and in the Fact Sheet, the ACO conditions that specifically control solids inventories have been incorporated into this permit. In addition, the effluent limits at the wet-weather

Outfalls 049A and 050A (and future 084A) have been tightened to require levels based on optimal operation of the existing facilities when the solids inventories are in acceptable ranges. Please refer to the Fact Sheet for a more detailed explanation of this issue.

4. Please see the Fact Sheet and explanations above on this issue. Also please note that the USEPA presumptive criteria for CSO control in the CWA refers to 85 percent of annual wet-weather volume controlled to provide the equivalent of primary treatment and disinfection if required (it is required in Michigan). Since the DWSD will exceed this 85 percent level, by achieving 95 percent control of annual wet-weather volume with completion of the RRO2 in 2019, the adaptive management approach described in the permit can be used for the remaining untreated CSO volume.
5. The permit requires the same fecal coliform effluent limits for Baby Creek as the other RTBs, in order to ensure that public health is protected. These limits are met by disinfecting the effluent with Sodium Hypochlorite.
6. This permit includes provisions that require the DWSD to control solids inventories and also optimize operation of the WWTP to meet more restrictive effluent limitations. The DEQ believes this will also help reduce odor levels at the WWTP from what was experienced while the WWTP was in noncompliance from 2009 through 2011. In addition, odor control issues will be further discussed in community meetings. Please see the discussion under Environmental Justice Concerns, above.
7. Volume modeling for the entire collection system is completed using the Greater Detroit Regional Sewer System model. This model has been developed and upgraded over the last 20 years, and serves decision-makers well for planning purposes. This model is a USEPA SWMM-based hydraulic model that is commonly used for modeling collection systems for wet-weather conditions.
8. There are differences between CSO treatment facilities; RTBs, and Screening and Disinfection facilities. Please be assured that all discharge facilities must ultimately demonstrate they can meet water quality standards at times of discharge. The Baby Creek facility actually offers a large amount of volume for storage of combined sewage in the large enclosures between the screening and disinfection building and the Rouge River. Also please note that this facility includes a much more restrictive screen size than RTBs, oil and grease controls, and a sewer that takes all dry-weather flows and significant wet-weather flows directly to the interceptor to the WWTP. These features are reflected in Total Suspended Solids effluent concentrations from the Baby Creek facility that are similar to those from the more "traditional" Hubbell-Southfield RTB.
9. Luna Pier WWTP effluent limits are set based on a TMDL needed to protect its immediate receiving waters. Please see the phosphorus discussion earlier in this letter for more detail on the justification for the total phosphorus limits in this permit for the Detroit WWTP, and note the ongoing study that is occurring regarding Lake Erie.
10. Effluent limits and conditions in this permit are based on meeting all NPDES requirements in the federal CWA and state law, Part 31 of Act 451, 1994, as amended. These include meeting water quality standards. Achieving water quality standards in NPDES permits, along with other necessary actions, are needed to progress towards delisting of impairments in the two applicable AOCs.

11. Section 303(d) of the federal CWA requires that a TMDL be developed when a waterbody does not meet designated uses. There is currently no evidence to suggest that nutrients are impacting designated uses in the Detroit River. The DEQ is continuing to review the available information to assess impacts to designated uses in western Lake Erie and will be conducting monitoring efforts in 2013. As previously mentioned, Michigan will be an active participant in Annex 4 of the Great Lakes Water Quality Agreement.

An NPDES Permit is a regulatory document containing facility-specific limitations and requirements. It is not the appropriate mechanism to make general recommendations regarding the development of a TMDL.

Again, we appreciate your comments and involvement during the drafting of this significant and complex NPDES Permit for the Detroit WWTP. If you have any questions about this response, do not hesitate to contact me at the phone number listed below, or by email at [argiroffp@michigan.gov](mailto:argiroffp@michigan.gov). Also, we are available to meet to discuss this response letter.

Sincerely,



Phil Argiroff, Chief  
Permits Section  
Water Resources Division  
517-241-1341

pa/sea

cc: Mr. Bob Newport, USEPA, Region 5  
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