

FACT SHEET

PERMITTEE/FACILITY NAME: City of Detroit Water and Sewerage Department / Detroit Wastewater Treatment Plant

COUNTY: Wayne

DESCRIPTION OF EXISTING WASTEWATER TREATMENT FACILITIES:

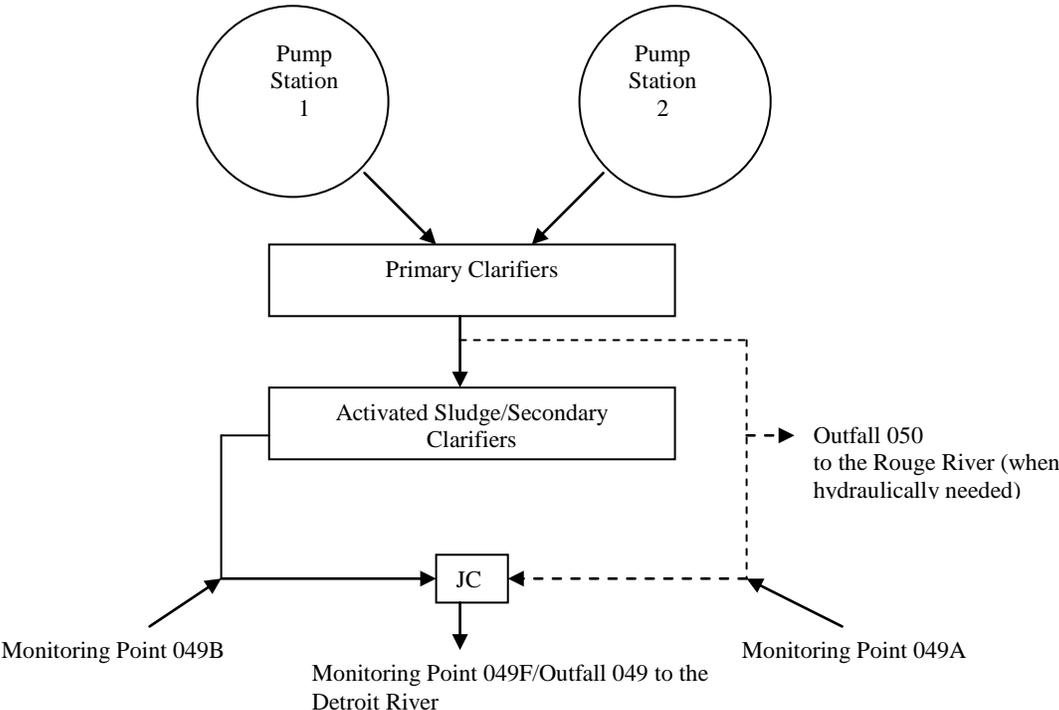
The Detroit Water and Sewerage Department (DWSD) owns and operates one of the larger wastewater treatment plants (WWTP) in the United States and the WWTP serves the City and 76 other communities. The WWTP treats approximately 650 million gallons per day (MGD) of wastewater on average. The City of Detroit and some of the surrounding communities have combined sewer systems. As a result, flows to the WWTP are significantly higher than average daily flows when there are storm events. The sustained peak primary treatment capacity for wet-weather flows is 1,700 MGD and the sustained peak secondary treatment capacity for wet-weather flows is currently 930 MGD (includes 60 MGD for plant recycle water). All dry-weather flows and a significant amount of wet-weather flows receive full secondary treatment at the WWTP. The plant was originally constructed in 1940, but now includes:

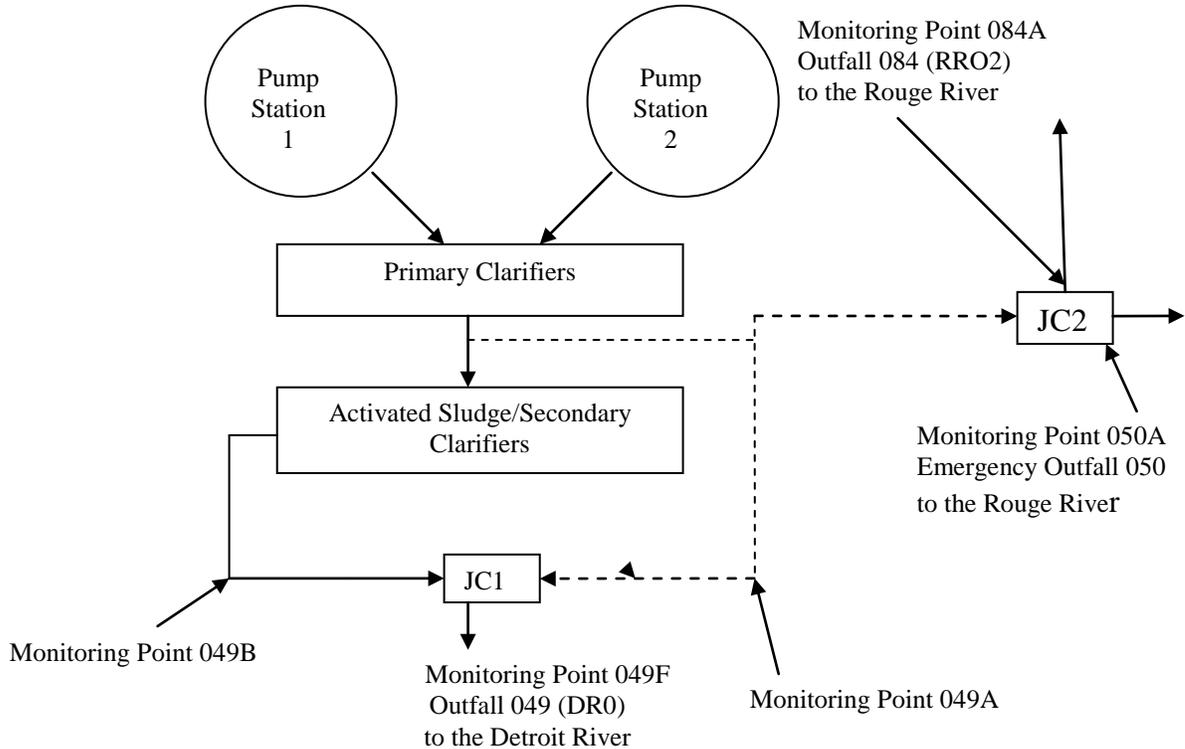
- Raw wastewater pumping at Pump Station Nos. 1 and 2 that receive flow from three interceptors: the Oakwood – NW Interceptor, the North Interceptor – East Arm, and the Detroit River Interceptor
- Primary treatment using 12 rectangular and 6 circular clarifiers
- Phosphorus removal using Ferric Chloride
- Secondary treatment using 4 high-purity oxygen-activated sludge tanks and 25 secondary final clarifiers
- Chlorination and dechlorination of the final effluent
- Gravity thickening of the solids generated in primary and secondary treatment
- Dewatering of the thickened solids using both centrifuges and belt filter presses
- Incineration of a portion of the dewatered solids
- Offloading the remainder of the dewatered solids (after lime addition) to trucks for either land application or landfill disposal

Flows from the WWTP are discharged to the Detroit River and Rouge River, and during wet weather, there are also untreated Combined Sewer Overflow (CSO) discharges to the Rouge River and Detroit River and treated CSO discharges to the Detroit River, Conner Creek, Rouge River, and O'Brien Drain.

Two flow diagrams follow. The first represents the current facility and the second reflects the facility once the second Rouge River Outfall (RRO2) is completed. The draft permit calls for this new outfall to be completed and in service by 2019. The RRO2 is called Outfall 084A in the permit. Outfall 049F is the final treated outfall to the Detroit River. Outfall 049F is also known as the Detroit River Outfall (DRO). It receives secondary treated flow from Internal Outfall 049B and excess primary treated flow from Internal Outfall 049A. All flows discharged through Outfall 049F are disinfected and dechlorinated. During wet-weather events, Outfall 050A to the Rouge River will intermittently discharge excess primary treated flow once the hydraulic capacity of Outfall 049F to the Detroit River is reached. The permit details the limits and conditions for Internal Outfall 049B, Internal Outfall 049A, final Outfall 049F to the Detroit River, current Outfall 050A to the Rouge River, and future final Outfall 084A (RRO2) to the Rouge River. Note that the RRO2 will receive the same flow that is currently discharged through Outfall 050A (RRO), except it will fully provide all primary treated flows discharged to the Rouge River with disinfection and dechlorination.

There are several CSO storage and treatment facilities throughout the service area that will be described in greater detail in the discussion regarding the status of the CSO Control Program. In addition, the remaining untreated CSOs will also be discussed.





As noted above, the Detroit WWTP sustained peak primary treatment capacity for wet-weather flows is 1,700 MGD (raw), and the sustained peak secondary treatment capacity for sanitary and wet-weather flows is currently 930 MGD (including recycle). Flows up to 930 MGD (minus recycle) that are conveyed to the plant receive primary and secondary treatment (and disinfection/ dechlorination) and are discharged via the Detroit River Outfall (049 which includes flows from 049B and 049A). Flows greater than 930 MGD and up to 1,700 MGD receive primary treatment. Flows greater than 930 MGD that can be hydraulically routed to Outfall 049 via 049A currently receive disinfection and dechlorination. Flows greater than 930 MGD that exceed the capacity of Outfall 049 (DRO) are discharged through Outfall 050. Currently flows discharged through Outfall 050 are not disinfected. Outfall 050 will be replaced by Outfall RRO2 (Outfall 084A) when it is completed; from that point forward, all flow through the WWTP will receive disinfection and dechlorination.

Title 40 of the Code of Federal Regulations (40 CFR), Subpart 122.41(m)(1), defines “bypass” as “the intentional diversion of waste streams from any portion of a treatment facility.” Under the United States Environmental Protection Agency’s (USEPA) regulations, such diversions are generally prohibited except under specified limited circumstances. One such circumstance is where the permittee demonstrates that: (1) the bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; (2) there was no feasible alternative to the bypass; and (3) the permittee has submitted the required notices. The bypass regulation specifies that a permitting authority may approve an “anticipated bypass” where the record demonstrates that these three conditions will be met, but only after consideration of adverse effects. How 40 CFR 122.41(m) is applied to CSO-related bypasses is specifically discussed in the USEPA’s April 1994 CSO Control Policy (c.7 “Maximizing Treatment at the Existing POTW Treatment Plant”). This policy was incorporated

into Section 402 of the Clean Water Act (dated November 27, 2002) by reference. The criteria specified in the USEPA's CSO Policy for approval of CSO-related bypasses in the permit have been met by the permittee. These include justification for the cut-off point at which flow will be diverted from the secondary portion of the treatment plant, and a demonstration that the conveyance of wet-weather flow to the WWTP for primary treatment is more beneficial than other CSO abatement. This demonstration was completed through the Long-Term CSO Planning effort that has produced other CSO abatement projects on the collection system as well.

The Department of Environmental Quality (DEQ) and the DWSD have evaluated the feasibility of providing additional secondary treatment at the WWTP. Due to full-plant evaluations of the WWTP during the Long-Term CSO Planning effort, the capacity of secondary treatment was increased to 930 MGD (including recycle). This amount of secondary treatment also has been shown to meet secondary limits for flows greater than the peak dry-weather flow, plus an appropriate quantity of wet-weather flow at the secondary treated Outfall 049B. There is currently no additional space at the plant where additional secondary capacity could be constructed. The DEQ has determined there are no feasible alternatives for providing secondary treatment to flows greater than 930 MGD. If flows above 930 MGD were routed through the secondary units, this would result in wash out of the WWTP's secondary treatment system (the criteria described in the USEPA CSO Control Policy). The DEQ analyzed the effects of the use of Outfalls 049A and 050 (until replaced by RRO2), and the new Outfall RRO2, and determined that the use of these outfalls in wet weather, with the treatment being provided, will, after the completion of RRO2, conform with State Water Quality Standards and will not result in degradation of the Detroit River, the Rouge River, or Lake Erie. Therefore, in accordance with the USEPA's CSO Control Policy (as incorporated into the Clean Water Act) and 40 CFR § 122.41(m)(1), the DEQ is approving the discharge of treated CSO flows through Monitoring Points 049A and 050A (until Outfall 050 is replaced by RRO2), and the new Outfall RRO2 (Outfall 084A).

RECEIVING WATERS:

The Detroit River is protected for agricultural uses, navigation, industrial water supply, public water supply, cold-water fish, other indigenous aquatic life and wildlife, partial body contact recreation, and total body contact recreation (May through October).

The Rouge River (including the Old Channel of the Rouge River), O'Brien Drain, and Conner Creek are protected for agricultural uses, navigation, industrial water supply, public water supply at the point of water intake, warm-water fish, other indigenous aquatic life and wildlife, partial body contact recreation, and total body contact recreation (May through October).

For the outfalls discharging to the Detroit River, the receiving stream flows used to develop effluent limitations are a 95 percent exceedance flow of 65,000 cubic feet per second (cfs), a harmonic mean flow of 104,000 cfs, and a 90-day, 10-year low flow of 92,500 cfs.

For the outfalls discharging to the Rouge River, the receiving stream flows used to develop effluent limitations are a 95 percent exceedance flow of 13 cfs, a harmonic mean flow of 80 cfs, and a 90-day, 10-year low flow of 27 cfs.

MIXING ZONE:

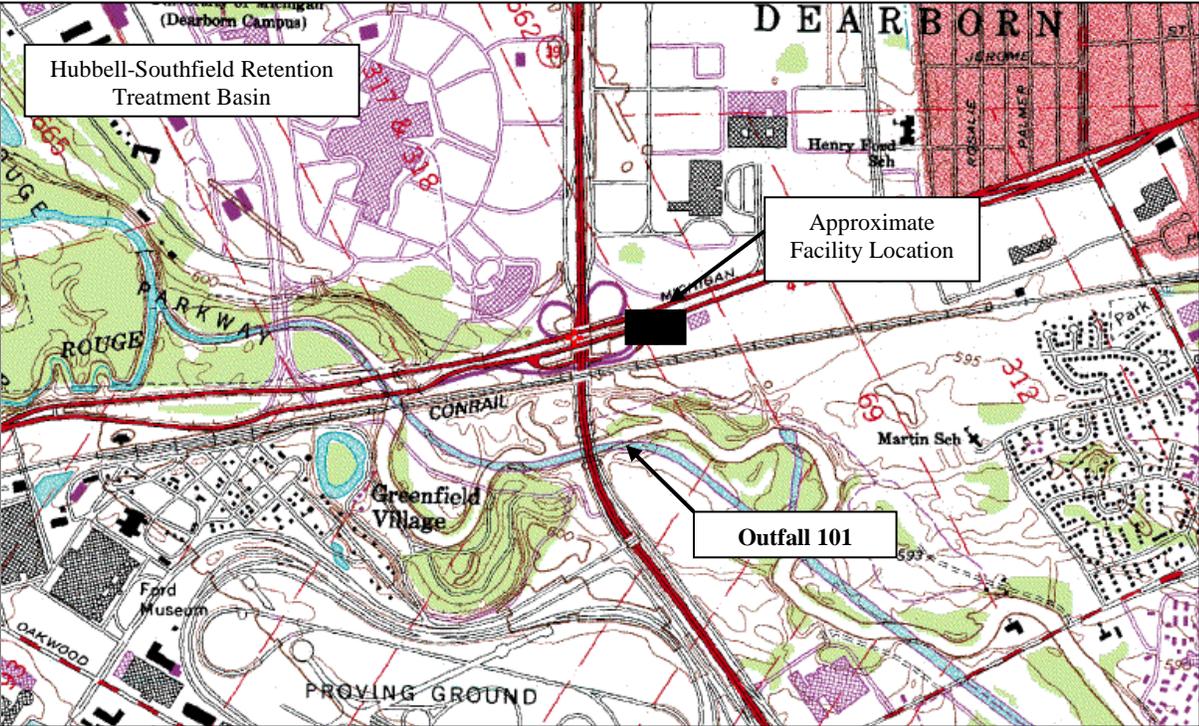
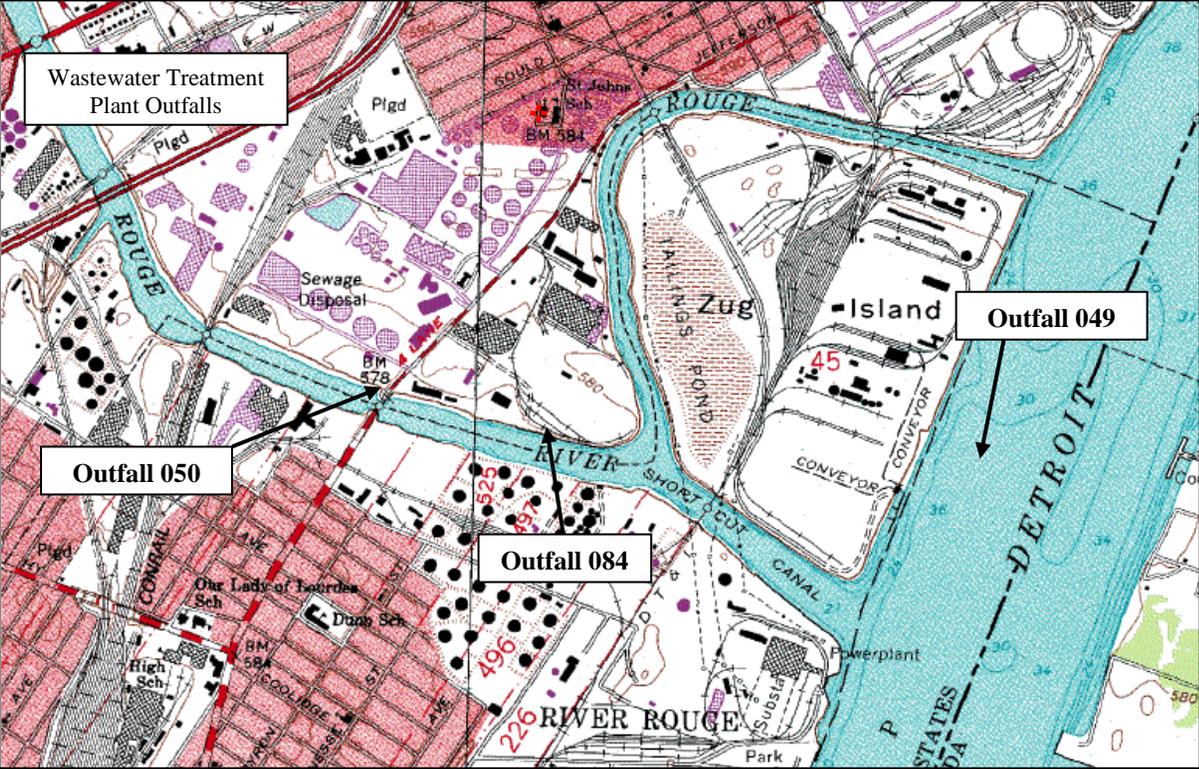
For toxic pollutants in the outfalls discharging to the Detroit River, the volume of the Detroit River used in assuring that effluent limitations are sufficiently stringent to meet Water Quality Standards is 12.5 percent of the applicable design flows of the receiving stream.

For toxic pollutants in the outfalls discharging to the Rouge River, the volume of the receiving stream used in assuring that effluent limitations are sufficiently stringent to meet Water Quality Standards is 25 percent of the applicable design flows of the receiving stream.

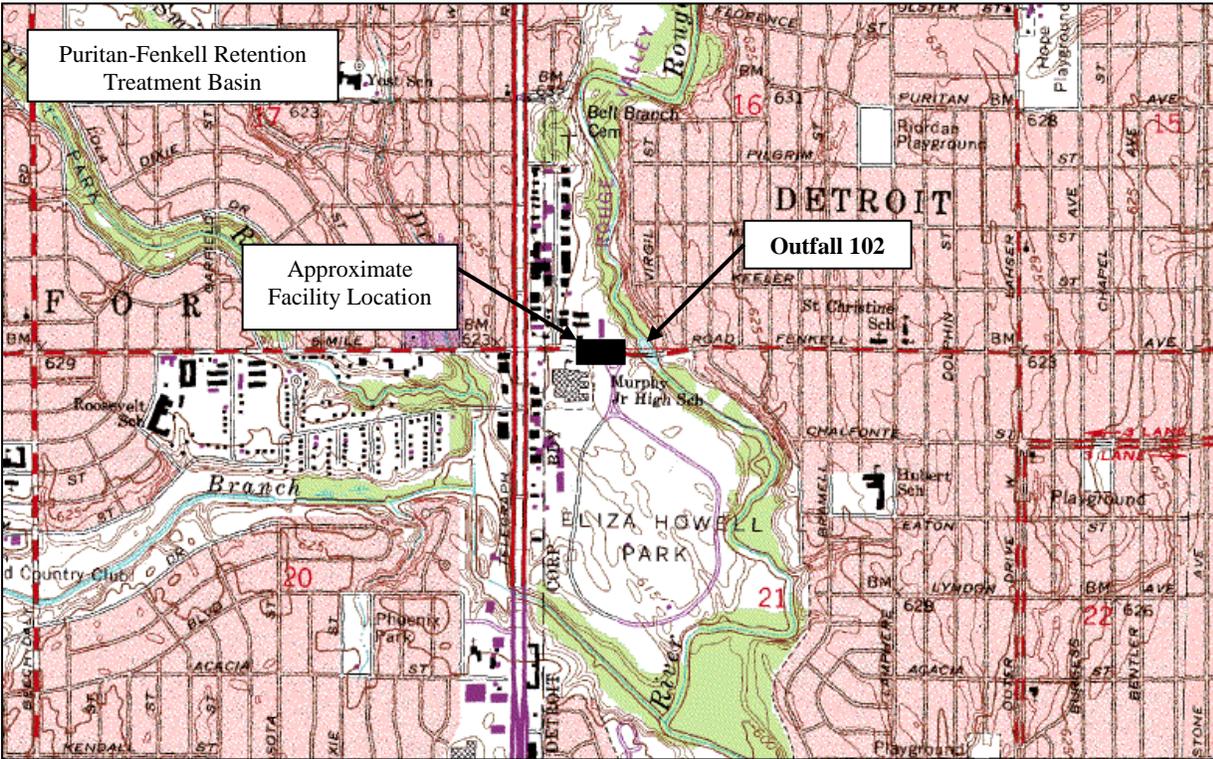
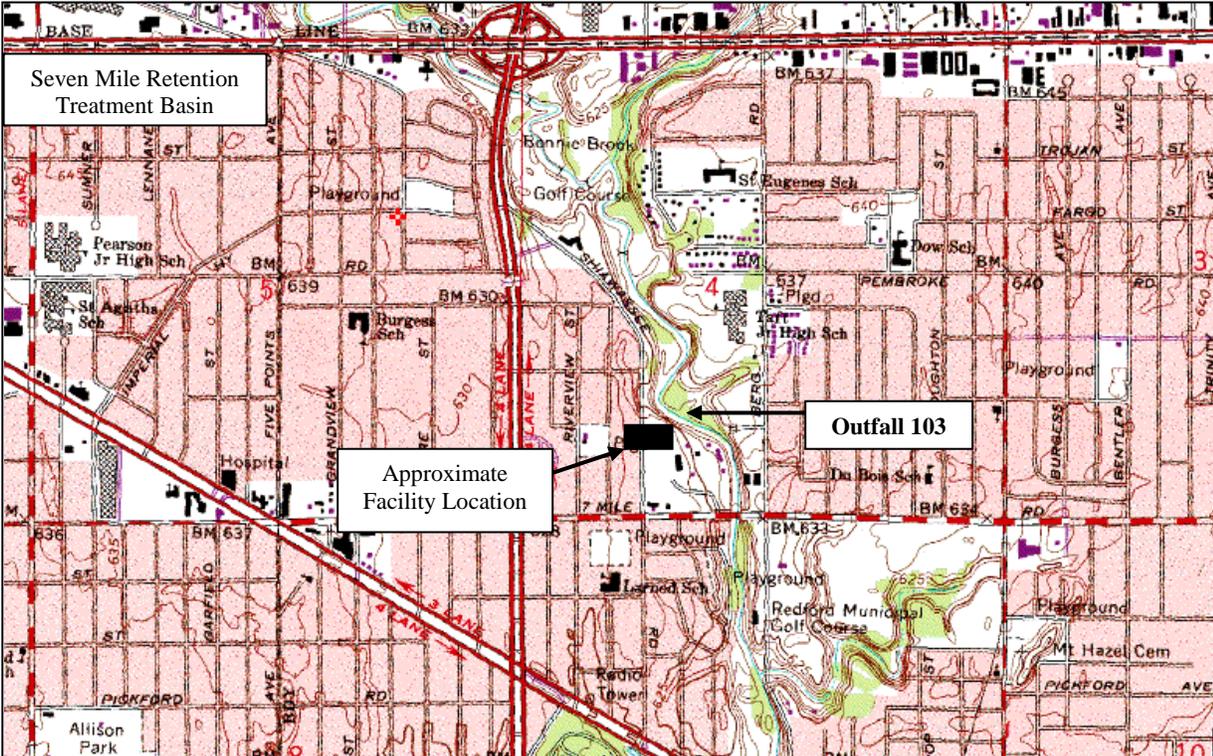
The permit approves discharges from the WWTP's primary treated effluent conduits (Outfalls 050A and future Outfall 084A) to the Rouge River during or following wet-weather events when the hydraulic capacities of the secondary treatment facilities are exceeded (i.e., greater than 930 MGD). Because these flows result significantly from combined sewer systems, the authorized discharges are addressed according to the regulatory approach taken for CSO discharges. These intermittent discharges are evaluated to ensure that they meet (or will meet) Water Quality Standards at times of discharge. This is consistent with state and federal regulations and policies regarding authorizations from combined sewer systems.

For other pollutants, the volume of the receiving stream used in assuring that effluent limitations are sufficiently stringent to meet Water Quality Standards is the applicable design flows of the receiving stream. Specifically, the effluent limits for five-day carbonaceous biochemical oxygen demand (CBOD₅), Ammonia Nitrogen (NH₃-N), and effluent Dissolved Oxygen (DO) concentrations from Outfall 049 will not cause in-stream DO levels to be below the applicable DO standard in the Detroit River under critical conditions. Similarly, the CBOD₅, NH₃-N, and effluent DO concentrations in the proposed permit from Outfall 050A (and future Outfall 084A) will not violate the in-stream DO standard in the Rouge River at times of discharge.

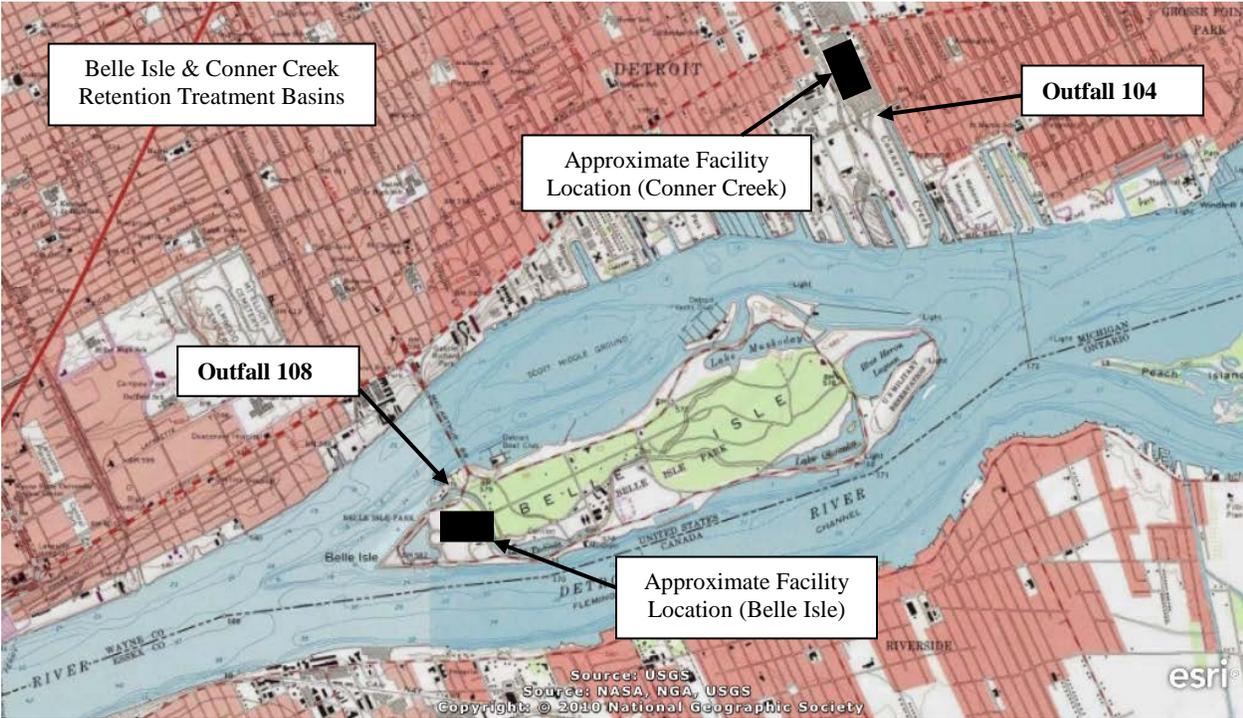
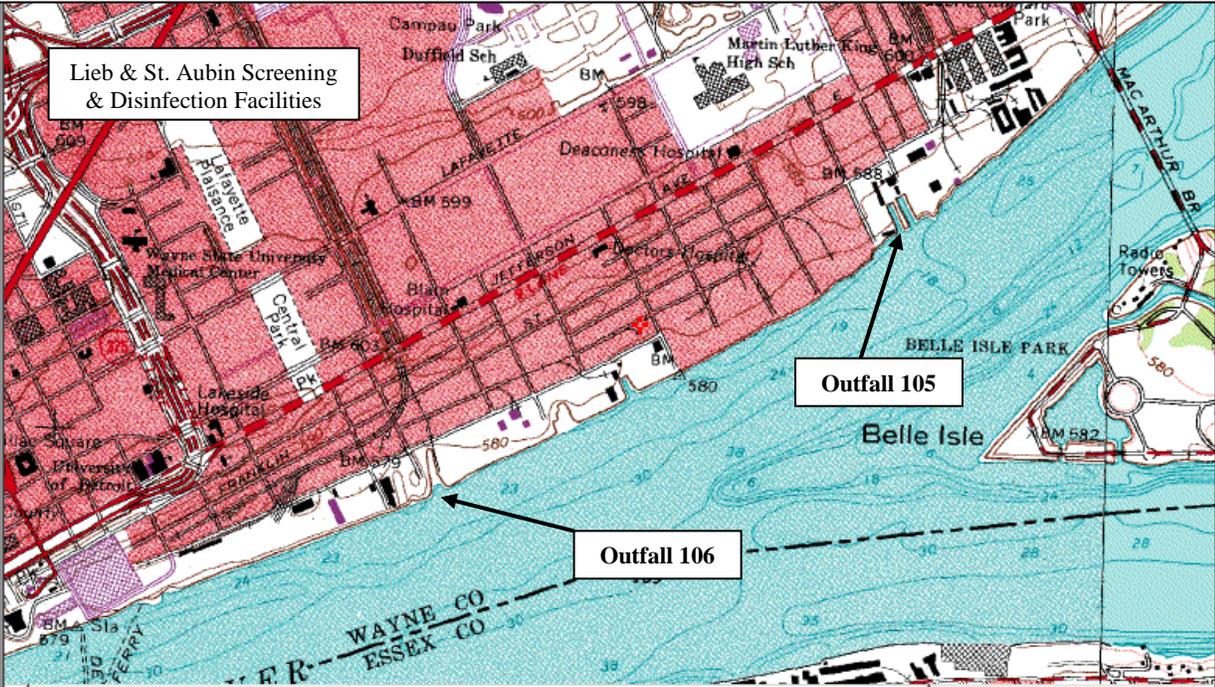
MAPS OF DISCHARGE LOCATIONS:



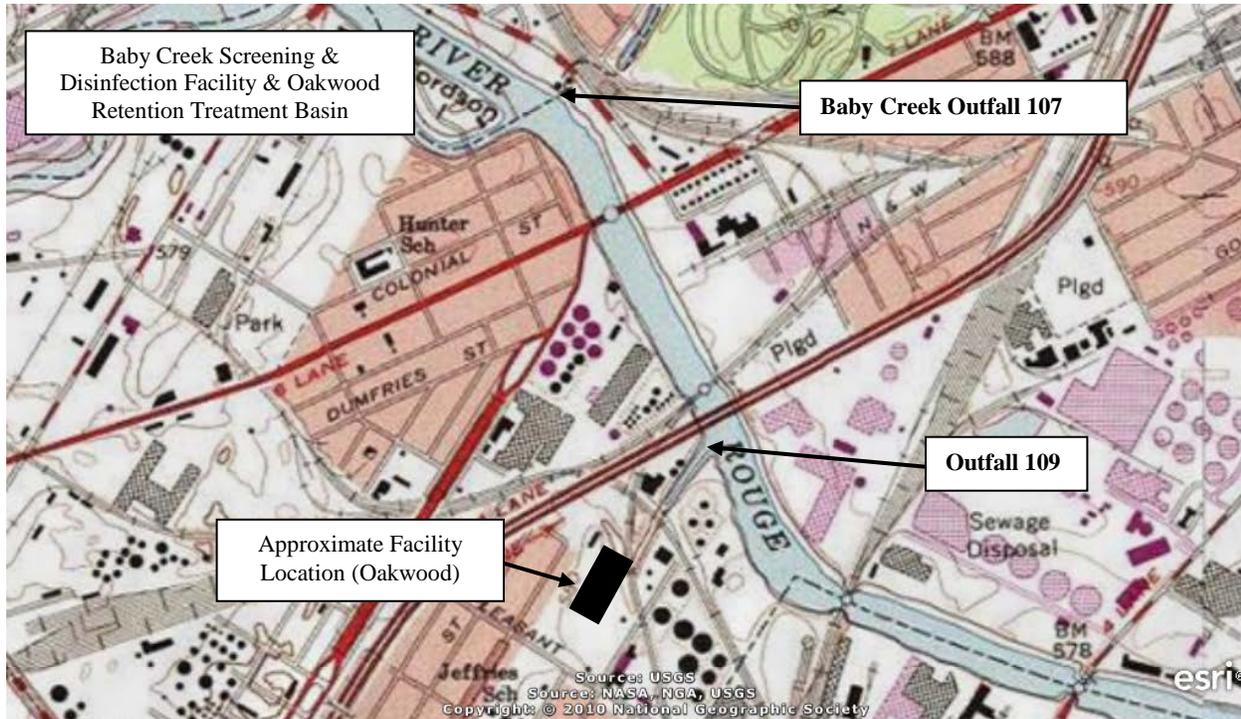
MAPS OF DISCHARGE LOCATIONS (continued):



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Following is information on the WWTP's existing effluent quality and the effluent limitations included in the permit.

EXISTING EFFLUENT QUALITY: (from DMR data from January 1, 2012, to November 30, 2012)

Monitoring Point 049F/Outfall 049

<u>Parameter</u>	<u>Minimum Daily</u>	<u>Maximum Monthly</u>	<u>Maximum Daily</u>
Flow	---	744 MGD	1,127 MGD
Total Residual Chlorine	---	---	0.00 mg/l
Oil & Grease	---	---	5.0 mg/l
Amenable Cyanide	---	---	31 µg/l
Total Mercury	---	---	7 ng/l
Total PCBs	---	---	< 0.2 µg/l
Carbonaceous Biochemical Oxygen Demand (CBOD ₅)	---	---	16 mg/l
Ammonia Nitrogen (as N)	---	15.5 mg/l	17.4 mg/l
Acute Toxicity	---	---	0.0 TU _A
Dissolved Oxygen	5.0 mg/l	---	---
pH	6.6 S.U.	---	7.3 S.U.
			<u>Maximum Weekly</u>
Fecal Coliform Bacteria	---	46 cts/100 ml	96 cts/100 ml

Monitoring Point 049A (monitoring location following primary treatment processes)

<u>Parameter</u>	Minimum	Maximum	Maximum
	<u>Daily</u>	<u>Monthly</u>	<u>Daily</u>
Flow	---	21 MGD	254 MGD
CBOD ₅	---	18 mg/l	58 mg/l
Total Suspended Solids	---	36 mg/l	---
Total Phosphorus (as P)	---	0.87 mg/l	---
Ammonia Nitrogen (as N)	---	6.5 mg/l	11.2 mg/l

Monitoring Point 049B (monitoring location following secondary treatment processes)

<u>Parameter</u>	Minimum	Maximum	Maximum
	<u>Daily</u>	<u>Monthly</u>	<u>Daily</u>
Flow	---	798 MGD	954 MGD
CBOD ₅	---	5 mg/l	7 mg/l
Total Suspended Solids	---	10 mg/l	13 mg/l
Total Phosphorus (as P)	---	0.65 mg/l	---
Ammonia Nitrogen (as N)	---	15.3 mg/l	17.2 mg/l

		Minimum	
		<u>Monthly</u>	
CBOD ₅ Minimum Percent Removal	---	92.0 %	---
Total Suspended Solids Minimum Percent Removal	---	90.4 %	---

Monitoring Point 050A (the monitoring point for the Rouge River Outfall)

<u>Parameter</u>	Minimum	Maximum	Maximum
	<u>Daily</u>	<u>Monthly</u>	<u>Daily</u>
Flow	---	29 MGD	250 MGD
CBOD ₅	---	18 mg/l	30 mg/l
Total Suspended Solids	---	---	36 mg/l
Total Phosphorus	---	0.75 mg/l	---
Ammonia Nitrogen (as N)	---	5.9 mg/l	8.2 mg/l
Total Copper	---	---	100 µg/l
Amenable Cyanide	---	---	104 µg/l
Total Mercury	---	---	21 ng/l
Total PCBs	---	0.2 µg/l	---
Acute Toxicity	---	---	0 TU _A
Dissolved Oxygen	1.9 mg/l	---	---
pH	6.5 S.U.	---	7.8 S.U.

BASIS FOR EFFLUENT LIMITATIONS AND CONDITIONS:

This permit focuses on addressing three major issues. The first is providing effluent limits, solids handling requirements, and improved operations and maintenance through a robust Asset Management Program. This will help ensure that the Detroit WWTP achieves and maintains long-term and sustained compliance with all permit requirements. The second is a reduction in the permitted total phosphorus loads to help reduce phosphorus loadings to Lake Erie. There are numerous sources of phosphorus loadings to Lake Erie, including the Detroit WWTP. Loadings reductions from point and nonpoint sources are likely needed to help reduce harmful algal blooms in

Lake Erie. The third is a new adaptive management CSO Control Program that recognizes the significant achievements of the Detroit CSO Control Program over the last 20 years, sets forth schedules for completion of the core CSO Control Program, expands the use of Green Infrastructure, and moves forward with the remainder of the control program to meet Water Quality Standards at times of discharge, taking into account the financial capability of City residents based on objective financial criteria. Each of these major issues is further described below.

1. Measures to ensure sustained long-term permit compliance

The Detroit WWTP has had periods of violations of its NPDES Permit limits and conditions over the past 35 years, and has remained under an active federal consent judgment issued by the U.S. District Court (Eastern District of Michigan). After one period of violations from 1997 through 1999, a second amended consent judgment was issued in 2000. These violations largely resulted from high solids inventories accumulating at the WWTP. The high solids inventories resulted from ineffective operations to dewater solids and remove them from the WWTP. The second amended consent judgment, in part, resulted in the repair, rehabilitation, and replacement of WWTP equipment in the liquid, solids, and utility areas from 2000 to 2005. The WWTP was then in substantial compliance with its NPDES Permits from 2000 until mid-2009. Violations again started in September 2009 and continued until November 2011. This led to issuance of an Administrative Consent Order (ACO) between the DWSD (and the City of Detroit) and the DEQ in July 2011. As was the case in the late 1990s, the immediate cause was high solids inventories in the WWTP. Initial violations were for total suspended solids (TSS) at the secondary treated outfall (Outfall 049B) through January 2010. Violations then shifted to the intermittent outfalls (Outfalls 049A and 050A) that discharge wet-weather flow, and included TSS and mercury/PCBs that were associated with the higher concentrations of TSS.

The resulting ACO is structured to ensure reliable capacity of sludge dewatering, conveyance, and disposal in the near- and long-term and, most importantly, ensure proper maintenance, staffing, capital improvement, and purchasing for the DWSD for sustained long-term compliance.

The permit contains a Facility Improvement Program that includes important elements from the ACO to address proper operation and maintenance of solids dewatering, conveyance, and disposal in the near- and long-term. In addition, the Facility Improvement Program includes a requirement to develop an Asset Management Program and implement it once approved by the DEQ. Annual status reports of the Asset Management Program will also be submitted to the DEQ. The requirements of an Asset Management Program contain goals of effective performance, adequate funding, and adequate operator staffing and training. Asset Management is a planning process focused on gaining optimum value for each asset and providing the financial resources to rehabilitate and replace them when necessary; and typically includes five core elements that identify the current state of the asset, the desired level of service, the most critical asset(s) to sustain performance, the best life-cycle cost, and the long-term funding strategy to sustain service and performance. The DEQ believes that this Asset Management Program will be critical to reducing the likelihood that the Detroit WWTP will again fall into a period of permit violations. The current management of the DWSD and the Detroit WWTP supports asset management.

The previous permit contained CBOD₅, TSS, and total phosphorus limits at Outfalls 049A and 050A that were originally established in the late 1970s. These limits were 100 mg/l for CBOD₅ and TSS, and 2.5 mg/l for total phosphorus, based on 30 discharge day rolling averages. Structuring these effluent limits as rolling average limits had the effect of causing monitoring data to lag behind the current performance of the plant. Operational problems could occur for a period of time before the

problems manifested themselves as violations of the rolling average limits. In addition, once violated, it was difficult to regain compliance with the limits, even when the WWTP was again being operated correctly. This made it difficult to use the limits in order to gauge effective operation and maintenance at the WWTP. Therefore, in concert with the significant elements of the Facility Improvement Program, the permit contains more stringent monthly average effluent limits for CBOD₅, TSS, and total phosphorus that are based on the existing effluent quality at the WWTP while the facility is being properly operated and maintained. These new effluent limits will better and more quickly indicate the level of performance at the WWTP (e.g., if solids inventories are becoming excessive and affecting wet-weather treatment performance), and should allow for more effective reactions from the DWSD and the DEQ should operation and maintenance issues arise again at the WWTP. Thus, the revised effluent limits will be more protective of water quality.

2. Reduction in permitted Total Phosphorus discharged from the Detroit WWTP

Over the last several years (excluding 2012), harmful algal blooms have been observed in the western basin of Lake Erie. It has been suggested that current phosphorus loadings from several sources may be contributing to this problem. Potential sources of phosphorus to this system include point sources from WWTPs in Michigan, Ohio, and Ontario; agricultural sources from Ohio, Michigan, and Ontario; and other nonpoint sources. It has been estimated that the Detroit WWTP and CSOs contribute about 5 percent of the total phosphorus load to the western basin of Lake Erie. In Michigan, all WWTPs that discharge directly to the Great Lakes, or affect the Great Lakes, currently include effluent limits of 1 mg/l based on Great Lakes protection. In addition, there may be other stressors that help manifest these harmful blooms, including the introduction of aquatic invasive species. There is an ongoing process, headed by the USEPA under the Great Lakes Water Quality Agreement, to further evaluate the causes of these harmful algal blooms and recommend courses of action. This process includes the DEQ.

However, in order to be proactive, the DEQ and the DWSD are committed to reducing the permitted levels of total phosphorus at the Detroit WWTP in this permit to help reduce loadings, while further studies and evaluations, as described immediately above, are being completed. Therefore, the permit contains a reduced monthly average total phosphorus limit of 0.7 mg/l and growing season average limit of 0.6 mg/l (April – September) at Outfall 049B. These limits will be applicable beginning in January 2015. Outfall 049B is the secondary treated outfall and currently has a monthly average effluent limit for total phosphorus of 1.0 mg/l. Note that the total phosphorus effluent limits at wet-weather Outfalls 049A and 050A (and future Outfall 084A) have also been immediately reduced from 2.5 mg/l as a 30 discharge day average to 1.5 mg/l as a monthly average.

In order to get an idea of the estimated discharge of total phosphorus loadings from all of Detroit's outfalls, the DEQ completed an analysis of the Detroit WWTP, treated CSOs, and untreated CSOs from July 2010 through June 2011 (see Table 1. below). It is estimated that approximately 1,220,000 pounds (550,000 kilograms) were discharged from all outfalls. The flow-weighted total phosphorus concentration for the total discharge of 269,353 million gallons was approximately 0.5 mg/l, and 98 percent received treatment that reduced total phosphorus. Note that 77 percent of this load was from secondary treatment at the WWTP, 16 percent from primary treatment at the WWTP, 3 percent from CSO treatment facilities on the collection system, and 4 percent from untreated CSOs on the collection system. Note that since this analysis, the Oakwood CSO RTB has come online and is further reducing the untreated CSO discharge from the City of Detroit.

Table 1. Total Phosphorus Loadings (July 2010-June 2011)

Discharge Location	Outfall	Level of Treatment	Receiving River	Flow (MG)	% of Total	TP Load (lbs)	% of Total
WWTP	049B	Secondary	Detroit	233639	86.7	945407	77.7
WWTP	049A	Primary, plus disinfection/dechlorination	Detroit	9025	3.4	67692	5.6
WWTP	050A	Primary	Rouge	15260	5.7	119633	9.8
On system	101-108	Treated CSO	Both	7138	2.7	39815	3.3
On system	several	Untreated CSO	Both	4291	1.6	44734	3.7
Total				269353	100.0	1217281	100.0

Notes:

WWTP 049B provides full secondary treatment, disinfection, dechlorination. Continuous discharge.

WWTP 049A provides primary treatment, disinfection, dechlorination. Wet weather discharge.

WWTP 050A provides primary treatment. Wet weather discharge.

RTB is a Retention Treatment Basin that captures and treats CSO. Wet weather discharge.

S/D is a Screening and Disinfection facility that treats CSO. Wet weather discharge.

Untreated CSO is not provided treatment at this time. Wet weather discharge.

3. Combined Sewer Overflow Correction Program

The City of Detroit has made significant progress implementing the Long-Term CSO Control Program (LTCP) that was first submitted in 1996, with approved elements first embodied in the 1997 NPDES Permit. Revisions to LTCP plans and scheduled projects were made and included in the 2003 NPDES Permit, and again in the 2007 NPDES Permit. Well over \$1.2 billion has been spent to date on the control of CSO discharges from Detroit outfalls. In 2009, a process was started to again revise the LTCP due to the City's deteriorating financial condition, reflecting national and regional economic conditions. A Financial Capability Assessment (FCA) was completed and indicated that the CSO correction program was a high burden to the City of Detroit residents. After a great deal of discussion, the DEQ was able to approve an alternative LTCP in 2010 that reduced the City's financial obligations to CSO control while still ultimately providing adequate treatment of CSOs to meet water quality standards at times of discharge. This alternative LTCP was included in a 2011 modification of Detroit's NPDES Permit. The updated LTCP and the permit requirements also included a Green Infrastructure component. Another FCA was submitted by the DWSD in 2012 as required by the NPDES Permit. The FCA again documented that costs associated with continued implementation of the CSO correction program were a high burden to the City of Detroit residents. Reflecting the 2012 FCA and updated costs for effectively operating the WWTP and other facilities, and taking into account opportunities to use Green Infrastructure and apply adaptive management, the permit again revises the DWSD CSO Control Program.

Detroit's LTCP has focused on: 1) bringing as much wet-weather flow as is feasible to the WWTP for treatment. Flows receive secondary treatment up to the capacity of the secondary units, and primary treatment for higher flows up to the capacity of the primary facilities; 2) using in-system storage in the combined collection system (large flat sewers are available for storage); and 3) by storing/treating priority CSOs on the collection system using Retention Treatment Basins (RTBs) and screening and disinfection facilities.

The DEQ requires that all CSOs be corrected to provide adequate treatment to meet all Water Quality Standards at times of discharge. Therefore, treatment of combined sewage, or elimination of combined sewage by sewer separation, can be acceptable alternatives. Green Infrastructure and other source control approaches can help reduce flows into the sewer system during storm events, also helping to reduce CSOs.

Significant progress to-date includes completion of:

- Additional facilities at the WWTP (i.e., two 180-MGD primary clarifiers, an additional influent pump in PS2) that have increased the capacity to treat combined wet-weather flows to primary treatment levels as required by the NPDES Permit (capacity now 1700 MGD as compared to the previous 1200 MGD). Now, on average, 11 billion gallons (BG) per year of formerly untreated CSO from upstream in the collection system is treated at the WWTP. Note that for the 2010-11 DWSD fiscal year (July-June), over 15 BG was discharged through Outfall 050A due to higher than average precipitation.
- Five CSO Storage/Treatment Facilities along the Rouge River. These include the Seven Mile RTB (2.2 MG), the Puritan-Fenkell RTB (2.8 MG), the Hubbell-Southfield RTB (24 MG), the Baby Creek Screening and Disinfection Facility (screens and disinfects all CSO flow ~5000 cfs peak), and the Oakwood RTB (9 MG).
- Four CSO Storage/Treatment Facilities along the Detroit River. These include the Conner Creek RTB (30 MG), the Belle Isle RTB (0.3 MG), the Leib Screening and Disinfection Facility (screens and disinfects all CSO flow ~1500 cfs peak), and the St. Aubin Screening and Disinfection Facility (screens and disinfects ~250 cfs peak).
- Six in-system storage gates at CSO outfalls along the Rouge River.
- Thirteen in-system storage devices within the collection system. These are inflatable dams in large sewers. Eleven of the 13 are in combined sewers that are tributary to the Detroit River CSOs, and two are in combined sewers that are tributary to the Baby Creek CSO Facility.
- Rehabilitation of pump stations and regulators along the Detroit River.
- Completion of the instrumentation/control system that determines CSO flows and discharge times for the remaining untreated CSOs. This instrumentation and control system also has many other functions for both the wastewater and water systems.
- Completion and several revisions to collection system hydraulic models used for LTCP planning and specific project design.
- Completion of additional control facilities or elimination of outfalls for five CSOs in the lower Rouge River.

Currently, wet-weather flow discharged from the RRO (Outfall 050A to the Rouge River) is treated using preliminary and primary treatment, but is not disinfected. Completion of the RRO-2 in 2019 will allow all excess wet-weather flow to be fully disinfected and dechlorinated, thus meeting all NPDES limits. This will ensure that all combined flows that pass through the headworks of the WWTP are treated to primary levels and disinfected; consistent with the USEPA CSO regulations and State of Michigan Water Quality Standards. The excess wet-weather flow discharged out of the DRO (Outfalls 049A through 049F to the Detroit River) is treated using preliminary and primary treatment, and currently receives full disinfection and dechlorination.

Upon completion of the RRO2, the DWSD will have completed its core CSO correction program. It is estimated that the completed CSO controls will provide treatment for about 95 percent of the annual wet-weather volume generated in Detroit, and around 90 percent or more of the previously-discharged untreated CSO volume from the City of Detroit. Untreated CSO has been reduced from an annual

average of 20 – 25 billion gallons per year (BGY) before submittal of the LTCP in 1993 to a current estimate of 1 – 3 BGY (varies depending on precipitation).

The permit also includes more detailed Green Infrastructure (GI) requirements in both the Upper Rouge area of the Rouge District, and now also in the near east-side area of the Central District. A plan for the Upper Rouge area will be required by August 1, 2013, building on what has been completed to-date regarding GI in the tributary area (see permit for detailed conditions). The DWSD will be required to spend an average of \$3 million per year during the life of this permit that is consistent with the plan once approved, along with a performance goal of removing 2,800,000 gallons of storm water from getting into the combined sewer system at the 2 year – 24 hour event, by June 30, 2017.

In addition, the previous permit required several engineered treatment facilities for the near east-side (in the Central District). These projects have been removed and replaced with an evaluation of potential GI projects and the associated flow reductions that potentially can be achieved. There is potential for extensive GI implementation based on the larger relative amount of vacant land in this area. A revised CSO correction plan for the area that considers all of the potential GI benefits and proposed reworked engineering solutions, as needed, is due on April 1, 2017.

The permit also lays out a program for addressing the remaining 10 percent of untreated annual CSO volume (the volume remaining after completion of RRO2). The program for these remaining CSO discharges reflects an adaptive management approach, and takes into account updated FCAs. Schedules for projects to address remaining CSOs will be proposed by the DWSD in future applications for permit reissuance, and approved schedules will be embedded into future permits. The proposed projects will reflect modeling and data on system performance, flows that can be kept out of the system through GI and other source control measures, and lessons learned through CSO program implementation up to that time. The DWSD will be implementing adaptive CSO program requirements for the remaining untreated CSOs. This adaptive management CSO program will also ultimately ensure that this remaining 10 percent of untreated annual CSO volume is eliminated or adequately treated to meet Water Quality Standards at times of discharge. Previously-approved components of the LTCP for the Rouge River and the Detroit River are still ultimately applicable, although they can be revised during implementation of the adaptive management approach.

As part of this adaptive management approach, storm water runoff from new development and redevelopment will require control to help further reduce the volume and frequency of untreated CSO discharges. This permit condition is only applicable in areas that remain tributary to the combined sewer system, and only for sewers that are controlled by the DWSD. This is primarily a focus within the Rouge District and the Central District of the City.

Based on this facility's application for an NPDES discharge permit, the DEQ issued the applicant a permit to discharge, subject to effluent limitations and certain other conditions within the permit. Effluent limitations at Monitoring Point 049F for total mercury, total PCBs, total residual chlorine, fecal coliform bacteria, pH, and effluent monitoring requirements for acute toxicity, available cyanide, total copper, NH₃-N, CBOD₅, and DO are based on Water Quality Standards. Effluent limitations at Monitoring Point 049B for CBOD₅, TSS, the associated minimum percent removal requirements for these two pollutants, and pH are based on federal secondary treatment standards. The effluent limitations for CBOD₅, TSS, and total phosphorus at Monitoring Point 049A, Monitoring Point 050A, and future Monitoring Point 084A are based on the evaluation described previously in this document. The permit's requirements for flow monitoring are based on the permit writer's judgment.

PUBLIC COMMENT

The draft permit was on public notice between January 18, 2013, and February 19, 2013, and all comments received were considered in the final decision to issue the permit. A public meeting to discuss the draft permit was held on February 13, 2013, at Western International High School in Detroit. The DEQ, at its discretion, decided to not hold a public hearing on the application. A responsiveness summary and copies of the individual response letters to comments received in writing or made verbally at the public meeting will be made available to the public.

ACTIONS TAKEN TO ADDRESS COMMENTS RECEIVED

1. Based on comments received the DEQ has decided to develop a Web page on the DEQ Web site that provides important DWSD documents, data, and other information at one location to the public. This Web page is under development but will be available in the near-future.
2. Based on comments received, the DEQ will set up and facilitate community meetings to discuss odor and noise concerns due to the WWTP, and other potential sources. The DEQ envisions holding four to six meetings per year. There will also be annual community meetings where the DEQ discusses WWTP compliance for the previous year, and upcoming permit requirements for the next year. The DWSD has committed to attending and participating in this process and this commitment is reflected in a new requirement in the permit dealing with public participation and outreach (see Part 1.A.12.d).
3. Based on DWSD comments, the DEQ reevaluated the mercury limit (based on the level currently achievable) at Outfalls 050A and 084A, and revised this limit to 36 ng/l based on a review of applicable data. It was proposed as 31 ng/l in the draft permit. The DEQ also reevaluated the final Total Phosphorus monthly average effluent limit at Outfalls 049A, 050A, and 084A and revised this limit to 1.5 mg/l. It was proposed as 1.3 mg/l in the draft permit. Note the final limits in the permit for these pollutants are more stringent than the limits in the previous permit.
4. Based on DWSD comments, the DEQ revised the language in Part 1.A.15.9) to clearly acknowledge that the storm water control requirement that the DWSD must propose by April 1, 2017, for new development and redevelopment is only required for sewers that remain tributary to the combined sewer system and only for sewers that the DWSD controls. Also note that the DEQ suggested and added language to the permit, where the DWSD may evaluate and request approval for interim adjustment of critical collection system regulators and gates to allow for more treated CSO discharge and less untreated CSO discharge from the remaining non-core CSO outfalls.
5. Based on DWSD comments, the DEQ revised the language in Part 1.A.15.9) to more clearly state what the draft language required – that non-core CSO correction projects were not expected to be proposed with the permit reapplication on April 1, 2017. The first non-core CSO correction projects will be expected with the permit reapplication on April 1, 2022. This is the point in time when, based on current financial projections, debt incurred for capital projects will start to be retired and the DWSD and the City will have some financial capability for the next round of priority non-core CSO projects (during the 2022-2027 permit cycle).