

APPENDIX I

2012 NPDES Permits - Part C Addendum

[for permit No. PA 00xxxx: *EXAMPLE* Water Pollution Control Plant]

Water Quality Based Combined Sewer System (CSS) Requirements

- 1) The Long Term Control Plan Update (LTCPU) as approved by the Department of Environmental Protection (the Approved LTCPU) for the City of Philadelphia Combined Sewer System (CSS) provides for the control of Combined Sewer Overflow (CSO) discharges to comply with the water quality standards of the Commonwealth of Pennsylvania and the water quality-based requirements of the Clean Water Act. The limitations and conditions in this section are intended to provide an adequate level of control to meet those standards and requirements.
- 2) The Approved LTCPU for the City of Philadelphia CSS provides for the control of CSO discharges to the following receiving waters: [*list of receiving waters for CSOs associated with this permit*].
- 3) The permittee shall develop and implement a system to effectively operate and maintain the facilities identified in the Approved LTCPU and any supplements thereto. The facilities for controlling discharges to the above-named receiving waters include, among other things, wet weather treatment facilities at the City's wastewater treatment plants; relined and rehabilitated intercepting sewers; diversion structures; outfall and overflow structures; and green stormwater infrastructure.
- 4) The green stormwater infrastructure component of the LTCPU is intended to provide for the gradual and continuing conversion of the hydrologic characteristics of the Philadelphia combined sewer service area, and consequently to reduce the frequency and volume of overflows from the combined sewer system. The City's progress in this endeavor will be tracked using a newly defined reporting standard known as "Greened Acres," as well as more traditional metrics such as overflow reduction volume.
- 5) Discharges from CSO outfall structures are prohibited except during wet weather when the Approved LTCPU is being implemented in accordance with the Department's approval, and when flows in combined sewer systems exceed conveyance or treatment capacities of the system during wet weather periods.
- 6) The permittee shall maintain the ability to track information about the ownership and maintenance responsibilities associated with all green stormwater infrastructure that is accounted for in this Program with a "Greened Acres" value.
- 7) The permittee shall maintain adequate legal authority to require the continued proper maintenance of all green stormwater infrastructure that is accounted for in this Program with a "Greened Acres" value, and that is not the property of the permittee.

- 8) All combined sewer flows conveyed to the City wastewater treatment plant shall be managed to maximize treatment, within the constraints of the hydraulic capacities and other conditions described in Part A of this Permit, and as described in the Philadelphia Combined Sewer Overflow Long Term Control Plan and its supplements.
- 9) A Table called "Table 1 - WQBEL Performance Standards" is included here. This table contains quantitative expressions of CSO Program implementation which are to be achieved by specific interim dates, or quantities to be achieved by the end of the Program. All of the numerical standards in this table will apply to the entire city-wide program of implementation, except for the "WPCP Upgrade" percentages.
- 10) The WQBEL Performance Standards used to evaluate conformance with the requirements of these Water Quality-Based Effluent Limits, for the purposes of permit compliance and assessing stipulated penalties, shall be the achievement of the following:
 - (a) *[plant name]* WPCP Upgrade: Design,
 - (b) *[plant name]* WPCP Upgrade: Construction,
 - (c) Miles of interceptor lined,
 - (d) Overflow Reduction Volume,
 - (e) Total Greened Acres, and
 - (f) Equivalent Mass Capture for TSS, BOD, and fecal coliform bacteria (25-year standard only)

Table 1 - WQBEL Performance Standards							
Metric	Units	Baseline value	Cumulative amount as of Year 5	Cumulative amount as of Year 10	Cumulative amount as of Year 15	Cumulative amount as of Year 20	Cumulative amount as of Year 25
[plant name] WPCP upgrade: Design	percent complete	0	* note (1)	* note (1)	* note (1)	100%	100%
[plant name] WPCP upgrade: Construction	percent complete	0	* note (1)	* note (1)	* note (1)	100%	100%
Miles of interceptor lined	miles	0	2	6	14.5	14.5	14.5
Overflow Reduction Volume ** (2)	million gallons per year	0	600	2,044	3,619	5,985	7,960
Total Greened Acres	Greened Acres	0	744	2,148	3,812	6,424	9,564
Equivalent Mass Capture - TSS	percent	62%	Report value	Report value	Report value	Report value	85%
Equivalent Mass Capture - BOD5	percent	62%	Report value	Report value	Report value	Report value	85%
Equivalent Mass Capture - Coliform bacteria	percent	62%	Report value	Report value	Report value	Report value	85%

*(1) Performance Standards for "percent complete" for the WPCP upgrade design and construction projects were not available at the time of the [date] Consent Order and Agreement. The City shall provide these targets to the Department along with the Facility Concept Plan for the WPCP. The Facility Concept Plan is due on a specific date given in the Consent Order and Agreement. After the Department approves the Facility Concept Plan, the targets for "percent complete" will be entered into Table 1. The formal modification of Table 1 may be accomplished by the DEP by issuing a revised NPDES permit.

** (2) Overflow Reduction Volume means the difference between the volume of overflow in million gallons per year for the condition prevailing at the time of the report and the volume of overflow in million gallons per year for the baseline year. The baseline year is represented by Philadelphia's physical systems as they were configured on January 1, 2006. Both volumes will be determined from modeling, using climatic data representing the same "typical year" for Philadelphia as determined in the LTCPU development process, and a hydrologic/hydraulic model calibrated with flow data collected for verification of actual performance.

Definition of terms used in WQBEL compliance

A key feature of the City's adaptive implementation management approach to applying greening concepts in implementing the LTCPU is the ability to apply an equivalency between achieving CSO reduction through implementing green stormwater infrastructure and achieving it through more traditional CSO controls. This equivalency allows for innovation and flexibility in meeting control requirements within the constraints of the implementation schedules.

The CSO control strategy alternatives evaluated in the Approved LTCPU include storage, transmission, treatment and source controls. The traditional CSO controls are contemplated to include storage, transmission, treatment, sewer separation, and others. The source control strategies are contemplated within the context of Greened Acres. WQBEL Performance Standards will be achieved by implementing a combination of Greened Acres and traditional CSO controls.

Greened Acres is a metric that accounts for the conversion of a highly impervious urban landscape through the implementation of projects that reduce stormwater runoff. A Greened Acre is described as an acre of impervious cover connected (tributary) to a combined sewer that subsequently is reconfigured to utilize green stormwater infrastructure to manage all or a portion of the stormwater runoff from that acre. Green stormwater infrastructure manages stormwater using one or more of the source control processes of infiltration, evaporation, transpiration, decentralized storage, alternative stormwater routing, reuse, and others.

A Greened Acre is an expression of the volume of stormwater managed by green stormwater infrastructure, based on the design for the project, and is conditional on the proper operation and maintenance of the project. One Greened Acre is equivalent to 1 inch of managed stormwater from 1 acre of drainage area, or 27,158 gallons of managed stormwater. These volumes will be tracked as Greened Acres (GA) using the following equation:

$$GA = IC * Wd$$

Where:

IC is the impervious cover utilizing green stormwater infrastructure (acres). This quantity can include the area of the stormwater management feature itself, as well as the area that drains to it.

Wd is the depth of water over the impervious surface that can be physically managed in the facility (inches). Green stormwater infrastructure designs will be aimed at controlling at least 1 inch of runoff, and up to 1.5 inches of runoff, unless otherwise deemed feasible by engineering design.