



Office of Water Management



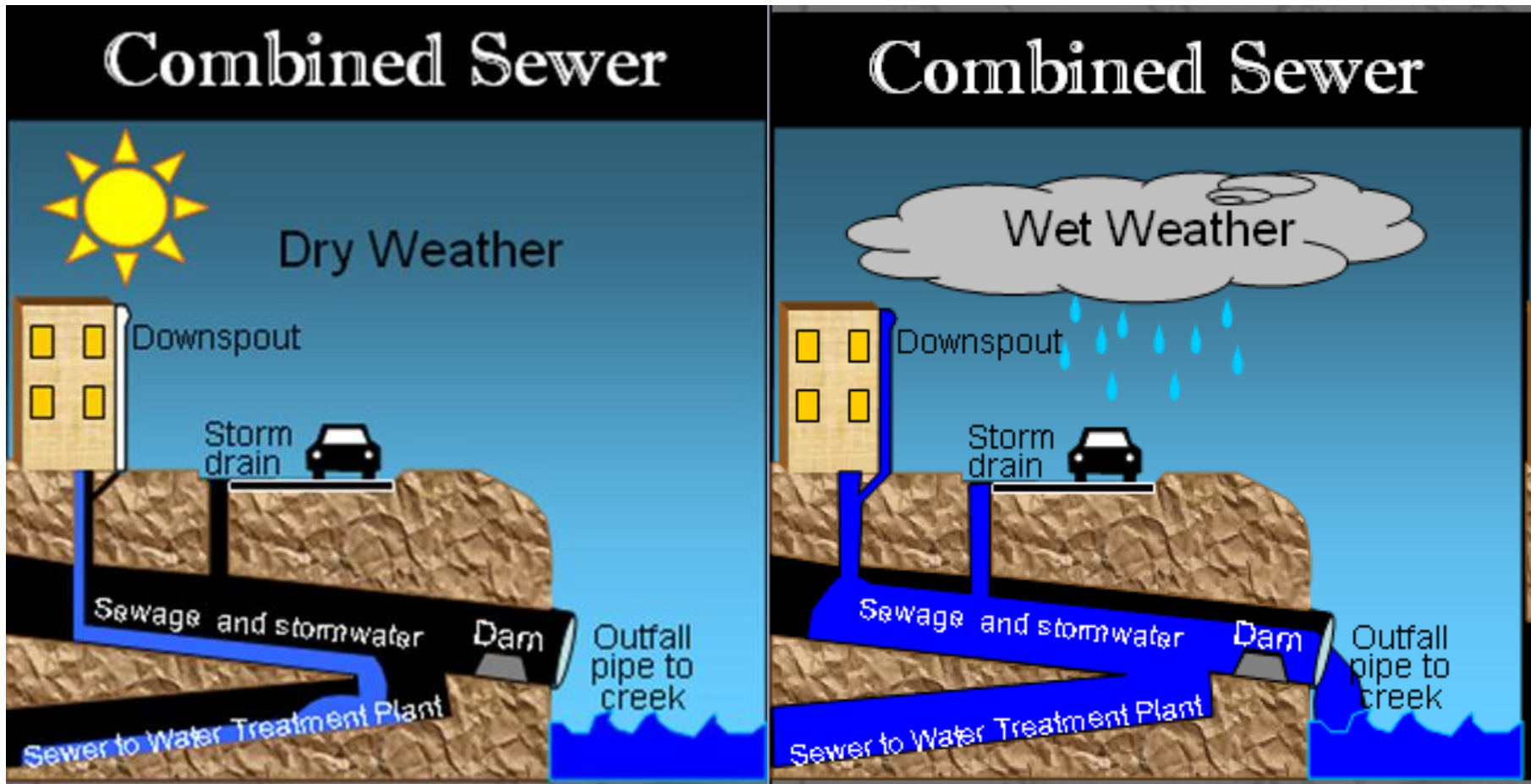
Combined Sewer Overflows (CSOs) in Pennsylvania

Stormwater: Green Solutions Beyond Gray Pipes

A conference on policy, financing and technology

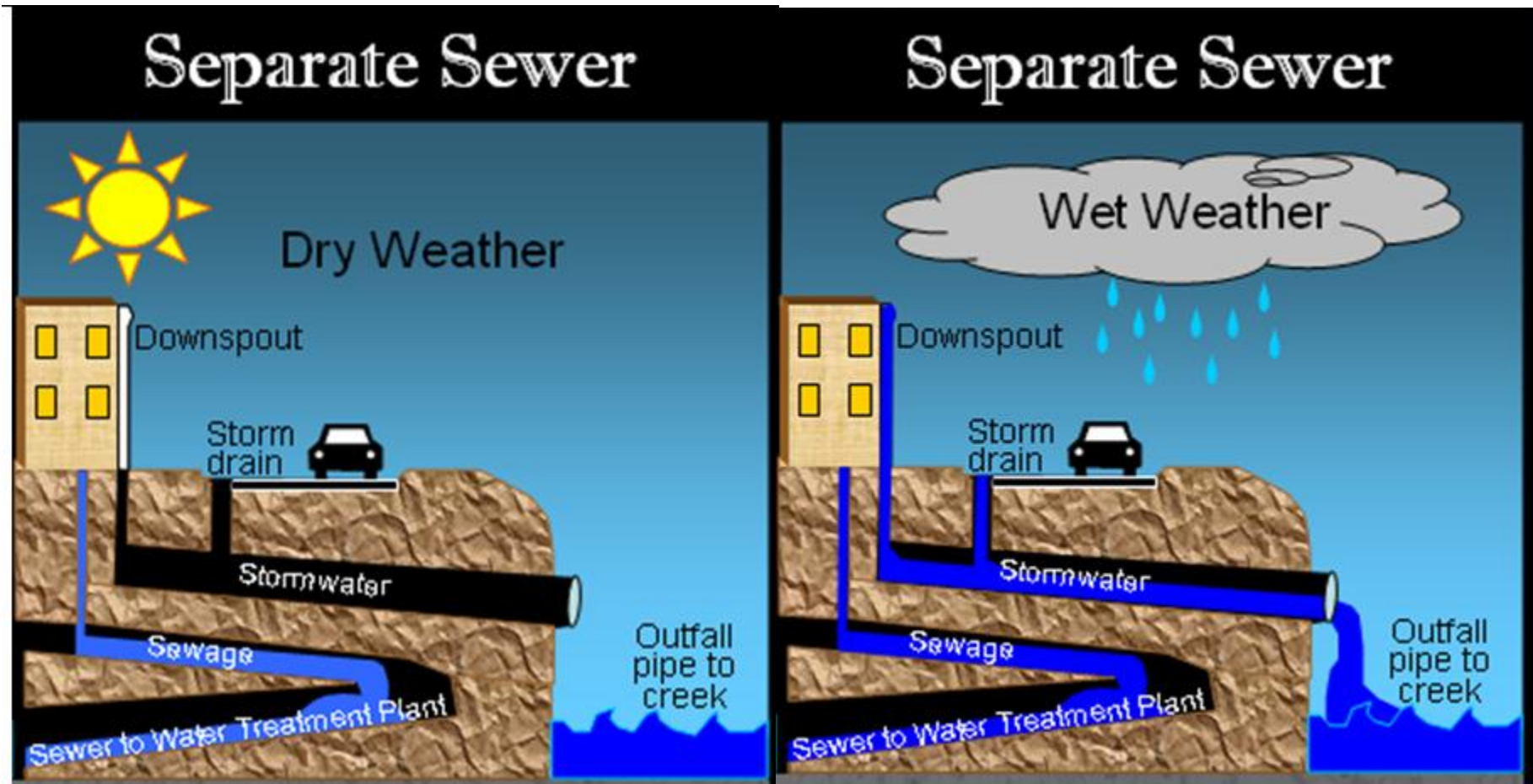
September 18 – 19, 2012

Sewage collection Systems



These images has been taken from www.phillyriverinfo.org.

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Pennsylvania Department of Environmental Protection (PA DEP)

- South East Regional Office (SERO)
- North East Regional Office (NERO)
- South Central Regional Office (SCRO)
- North Central Regional Office (NCRO)
- South West Regional Office (SWRO)
- North West Regional Office (NWRO)

CSOs Facilities in Pennsylvania

- SERO – 7 Facilities – 200 Outfalls
- NERO – 21 Facilities – 282 Outfalls
- SCRO – 11 Facilities – 87 outfalls
- NCRO – 11 Facilities – 108 outfalls
- SWRO – 75 Facilities – 905 Outfalls
- NWRO – 12 Facilities – 62 Outfalls

Total 137 facilities with 1,642 CSOs Outfalls.

PA DEP's Approach

Control and eliminate CSOs discharges as practicable, and ultimately bring all remaining CSOs discharges into compliance with state water quality standards through the NPDES permitting program.

- Nine Minimum Controls (NMCs)
- Long Term Control Plans (LTCPs)
 - Presumptive Approach
 - Demonstrative Approach.

PA DEP's Approach

Control approaches are based on Combined Sewer System (CSS) serving:

- less than 75,000 population; and
- more than 75,000 population.

Type of Combined Sewer Systems in PA:

- Satellite system (provide only connection and conveyance to POTWs; and
- Sewer System owned and operated by Publically Owned Treatment Works (POTWs).

PA DEP's Approach

Permit Part C requirements for CSOs includes:

- I. Management and Control of CSOs;
- II. Continued Implementation of NMCs;
- III. Implementation of LTCPs;
- IV. Monitoring and Reporting Requirements;
- V. Area-wide Planning/Participation Requirement;
- VI. Permit Reopener Clause; and
- VII. CSOs Compliance Schedule.

NMCs (Technology based approach)

1. Proper operation and regular maintenance programs for the sewer system and the CSOs.
2. Maximum use of the collection system for storage.
3. Review and modification of pretreatment requirements to assure CSO impacts are minimized.
4. Maximization of flow to the POTW for treatment.

NMCs (Technology based approach)

5. Prohibition of CSOs during dry weather.
6. Control of solid and floatable materials in CSOs.
7. Pollution prevention programs to reduce contaminants in CSOs.
8. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts.
9. Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

LTCPs (Water quality based approach)

- Permittees with CSOs are responsible for developing and implementing LTCP that will ultimately result in compliance with the requirements of the CWA.
- Most LTCPs in PA have taken the presumptive approach and have been developed on 85% capture.
- A little over 10% of the facilities with CSOs have taken the separation approach.

▶ LTCPs (Water quality based approach)

1. Characterization, Monitoring, and Modeling of the Combined Sewer System

- a. Rainfall Records.
- b. Combined Sewer System Characterization.
- c. CSO Monitoring.
- d. Modeling.

2. Public Participation In developing its long-term CSO control plan

Involve affected public thru public participation. Affected public includes rate payers, industrial users of the sewer system, down stream residence or water users, and any other interested persons.

▶ LTCPs (Water quality based approach)

3. Consideration of Sensitive Areas

The long-term CSO control plan should:

- a. Prohibit new or significantly increased overflows;
- b. (1) Eliminate or relocate overflows that discharge to sensitive areas except where this would provide less environmental protection than additional treatment; or
(2) provide the level of treatment for remaining overflows deemed necessary to meet WQS for full protection of existing and designated uses.

▶ LTCPs (Water quality based approach)

4. Evaluation of Alternatives

a. "Presumptive" Approach

- I. No more than an **average of four overflow events per year**, Permitting authority may allow up to **two additional overflow events per year**.
- II. The elimination or the **capture** for treatment of **no less than 85%** by volume of the combined sewage collected in the CSS during precipitation events on a system-wide annual average basis; or
- III. The elimination or removal of no less than 85% mass of the pollutants.

▶ LTCPs (Water quality based approach)

b. "Demonstrative" Approach

The permittee should demonstrate each of the following:

- I. The planned control program is adequate to meet WQS and protect designated uses;
- II. The CSO discharges remaining after implementation of the planned control program will not preclude the attainment of WQS or contribute to their impairment.
- III. The planned control program will provide the maximum pollution reduction benefits reasonably attainable; and
- IV. The planned control program is designed to allow cost effective expansion or retrofitting if additional controls are subsequently determined to be necessary to meet WQS or designated uses.

▶ LTCPs (Water quality based approach)

5. Cost/Performance Considerations

- Cost performance curve also known as Knee of the Curve

6. Operational Plan

- After agreement permittee should revise O&M program developed under NMCs according to the LTCPs.

7. Maximizing Treatment at the Existing POTW

- Can have two significant water quality benefits:
 - a. Increased flows may enable the permittee to eliminate or minimize overflows to sensitive areas;
 - b. Increased flows would receive at least primary treatment prior to discharge.

▶ LTCPs (Water quality based approach)

8. Implementation Schedule

Construction phasing should consider:

- a. Eliminating overflows that discharge to sensitive areas as the highest priority;
- b. Use impairment;
- c. The permittee' s financial capability (consideration of Median household income, Total annual wastewater and CSO control costs per household as a percent of median household income, Property tax collection rate, Unemployment, and Bond rating);
- d. Grant and loan availability;
- e. Previous and current residential, commercial and industrial sewer user fees and rate structures; and
- f. Other viable funding mechanisms and sources of financing.

▶ LTCPs (Water quality based approach)

9. Post-Construction Compliance Monitoring Program

CSO controls should include a post-construction water quality monitoring program (prepared by the permittee and approved by the NPDES authority) that must be assertive to verify the effectiveness of CSO controls. It must be

- adequate to verify compliance with the state water quality standards
- Protective of the designated uses.



More information about CSOs controls can be found on

EPA website

http://cfpub.epa.gov/npdes/home.cfm?program_id=5

DEP website

<http://www.elibrary.dep.state.pa.us/dsweb/View/Collection-8271>

**For further questions please contact:
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