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COMBINED SANITARY STORMWATER MANAGEMENT PROGRAM INTRODUCTION

The Sewer Authority of the City of Scranton (SSA) owns the wastewater collection, conveyance and treatment system serving Scranton and Dunmore. The SSA also treats wastewater from sections of Dickson City, Moosic and Taylor. The wastewater system consists of over 275 miles of collection sewers and large interceptors, 80 combined sewer regulator chambers, seven pumping stations and a Wastewater Treatment Plant. Approximately 63% (172 miles) of the collection sewers are combined sewers, which convey the combined storm water and sanitary sewage flow to regulator chambers prior to connection with an interceptor sewer. When the volume of storm water exceeds the capacity of downstream facilities, these regulator chambers allow the excess volume to discharge into nearby surface waters. These overflows, called Combined Sewer Overflows, or CSOs, can be a major source of water pollution.

Combined sewer systems (CSS) are primarily found in older cities in the Northeast, Great Lakes and Mid-Atlantic regions. Of the estimated 11,000 CSOs nationally, approximately 80% are found in these regions and serve 43 million people. Most of the Authority's CSOs discharge to the Lackawanna River. Several CSOs discharge to tributaries including Keyser Creek, Leggett's Creek, Little Roaring Brook, Roaring Brook and Stafford Meadow Brook. Newer parts of the city since 1967 are required to install separate sanitary and storm water sewers.

Combined sewer overflows discharge diluted sewage, pathogens, bacteria, oil and grease, industrial pollutants and other contaminants into rivers and streams. These contaminants can reduce oxygen in the water and elevate bacteria levels, which create water conditions that can harm humans and aquatic life. CSOs can also discharge additional environmental pollutants such as urban storm water moff, automotive fluids, household chemicals and floating sewage and debris.

REGULATORY CONCERNS

The Environmental Protection Agency (EPA) issued a national CSO Policy in 1994. The CSO policy became law in December 2000 with the passage of the Wet Weather Water Quality Act. In late 2002, the SSA was given an Administrative Order for Compliance from EPA. The Order focused on addressing efforts in implementing minimum controls designed to reduce CSOs. Some of these controls include proper operating, inspection and maintenance of the CSO outfalls, maximize the use of the collection system by regularly cleaning wet wells at pump stations and cleaning all catch basins, review and assess non-domestic source discharges into CSOs, maximize the volume of combined wastewater processed at the Treatment Plant and to minimize the amount of combined wastewater that is discharged into receiving waters, the implementation of pollution prevention programs to reduce contaminants in CSOs and the development of a public education and outreach program.

In addition to the federal mandates of the CSO program, the SSA must also comply with the State Department of Environmental Protection's (DEP) Chesapeake Bay Compliance Plan for sewage treatment plants. Under the Federal Clean Water Act, the Chesapeake Bay is listed as an impaired waterway. Pennsylvania and other states (Maryland, Virginia and D.C.) made a commitment under the Chesapeake 2000 Agreement to help improve water quality by reducing the level of nutrients - specifically nitrogen, phosphorous and sediments - that pollute the bay and cause "dead zones".

In August 2005, new water quality standards came into effect. As a result, sewage treatment plants such as Scranton's, discharging nutrients to Pennsylvania's Susquehanna River must cap those discharges or they will be in violation of the downstream water quality standard under federal law. The federal requirements driving Pennsylvania's obligation are quite specific. As a result, the operating permit recently issued to the SSA by DEP contains the nutrient limits and Scranton must be in full compliance by October 2012.

RESPONSE TO FEDERAL AND STATE MANDATES

In response to the Federal Clean Water Act and the Chesapeake Bay Compliance Plan, and as a willing and responsible party in meeting the Authority's obligation to protect and improve our environment, the SSA, with the assistance of the Lackawanna River Corridor Association, is going to implement a comprehensive Combined Sanitary Stormwater Management Program.

The goal of this program is to reduce the amount of sediment and grit coming into the collection system, reduce stormwater pollutants and the cleaning, repair and replacement of catch basins connected to the combined sanitary storm water system.

PROGRAM ELEMENTS

PUBLIC OUTREACH /PUBLIC EDUCATION

Establishing early communication and understanding of the Combined Sanitary Stormwater Management Program by the public is an important first step and critical to the success of the program. The SSA is going to utilize the services of the Lackawanna River Corridor Association (LRCA) to assist the Authority in educating the public about the benefits of participating in the program.

The LRCA was created by local citizens in 1987 to promote the restoration and conservation of the Lackawanna River and its watershed resources in the great Northeast Pennsylvania. The LRCA is a nonprofit, nonpolitical organization promoting our river through education, public involvement, consensus building, partnerships and hands on opportunities for young and old.

Since 1987, the LRCA has worked pro-actively with other community groups and public agencies to plan and promote projects which are addressing the issues of water pollution, recreation, community development, land and water conservation, public involvement with their river and watershed, and the public policy decision making which affects the river and watershed.

COMBINED SANITARY/STORM DRAIN MAINTENANCE

Public streets comprise 20% to 40% of impervious cover in highly urban areas. Between rainfall events, storm water pollutants accumulate on the impervious surfaces (roads, parking lots, etc.) such as sediment, nutrients, hydrocarbons, bacteria, pesticides, trash and other toxic chemicals. Storm drain maintenance is the last opportunity to remove pollutants before they enter the storm drain system and conveyance to our waterways.

STREET SWEPING

The ability of street sweepers to remove common stormwater pollutants varies depending on sweeper technology, sweeper operation and frequency, street conditions and the chemical and physical characteristics of the pollutants that have accumulated on the pavement. Although newer street sweeping technology can remove more than 90% of street dirt under ideal conditions, street sweeping does not necessarily guaranty water quality improvements. Street sweepers are typically more effective at removing larger sized particles than fine grained particles and nutrients. The street sweepers most commonly used in the northeast communities are mechanical brush. The City's Department of Public Works and Dunrnore Borough Department of Public Works utilize three mechanical brush sweepers, two owned by the former and one by the latter.

To complement the efforts of Scranton and Dunmore and to reduce the amount of pollutants entering our waterways, the SSA has purchased a regenerative air sweeper. In contrast to mechanical broom sweepers, this sweeper collects micro sized contaminants (fines) that accumulate on streets. These fines are known to contain a higher percentage of heavy metals, phosphorous and other pollutants. On a monthly basis, a regenerative air/vacuum sweeper can remove 22% of suspended solids, 4% of phosphorous and 4% of nitrogen as opposed to simple mechanical sweepers at 9%, 3% and 3% for the same material.

DOWNSPOUT DISCONNECTION

Combined Sewer Systems (CSS) are waste water collection systems designed to carry both sanitary sewage and storm water runoff in a single pipe to a waste water treatment plant. Inflow reduction can be a cost effective way to reduce the volume of flow entering the CSS and the volume or number of Combined Sewer Overflows. By helping to reduce overall flow volumes into a CSS, inflow reduction helps optimize system storage capabilities. Maximizing storage in the collection system is one of the minimum controls that Scranton and Dunmore is expected to implement in accordance with EPA policy.

Roof drains often convey rain fall directly from residential and commercial roofs into a CSS. Flow into the CSS can be reduced by redirection of roof drains onto lawns or into dry wells or drain fields, where flows can infiltrate into the soil. Redirection works best in residential areas where homes have open yards. According to the 2000 Census, there are 37,400 (3 1,300 Scranton & 6,100 Dunmore) occupied housing units. Not all of these units are served by the CSS and in some cases disconnection may not be practical.