



---

City of Lynchburg • Water Resources  
525 Taylor Street • Lynchburg • Virginia • 24501  
[www.lynchburgva.gov](http://www.lynchburgva.gov) • P 434-455-4250 • F 434-845-7353

## **City of Lynchburg CSO Program - Background**

Approximately one fifth of the City of Lynchburg area (6,000 acres out of 31,700 acres) was originally served by the combined sewer system (CSS) with a total of 132 overflow points with an annual overflow volume of over 1.2 billion gallons. The City of Lynchburg, Virginia is one of the few communities in the nation that took early actions to address its combined sewer overflow (CSO) issues shortly after the promulgation of the Clean Water Act. Since the 1970's, the City has actively working towards a solution to control the CSOs. The following is a summary of the major milestones of the CSO Program:

- Mid-1970s: City began to address CSOs by mapping out its entire combined sewer system and identifying the overflow points and outfalls.
- 1979: City completes the Infiltration/Inflow Evaluation Survey Report. Identified 132 overflow points.
- 1979-1989: City closed 24 CSO outfalls and gathered data needed for the CSO Long Term Control Plan (LTCP).
- 1989: City proactively completes "1989 CSO Study Update", five years before EPA published its 1994 CSO Policy and identifies three major components of the LTCP including: (1) CSS separation with option for convey and treat for downtown, (2) Interceptor replacement, (3) Rain leader disconnection program.
- 1993: City of Lynchburg and State Water Control Board (SWCB) entered into a Consent Special Order further implementing the 1989 plan.
- 2000: City completed an update of the 1989 study which recommended complete separation of CSS.
- 2009: City initiated its CSO LTCP Update study that takes a holistic approach to developing a plan to complete its CSO program and comply with water quality standards.
- 2014-2015: DEQ approves 2014 CSO LTCP Update Final Report and SWCB and City enter into a revised CSO Consent Special Order.
- 2015-present: City implementing remaining 10 CSO projects identified in CSO LTCP Update Final Report including \$54 million in wet weather upgrades to the Lynchburg Regional Wastewater Treatment Plant to double the wet weather capacity from 40 mgd to greater than 80 mgd.

By 2008, the City of Lynchburg had separated 75% of its combined sewer area, closed 110 overflow points (out of 132 original overflow points), and reduced 80% of its annual CSO volume. However, addressing the remaining major CSO outfalls that serve the centuries old downtown area had always been an anticipated challenge from both technical and financial perspectives. The City recognized that continued system-wide sewer separation was no longer a viable option to address the overall pollutant load reduction requirements set forth in the pending James River bacteria TMDL and Chesapeake Bay nutrient TMDL because of the unchecked pollutant loads from the municipal separate stormwater sewer system (MS4). To address this, the City of Lynchburg took an integrated approach for management of CSO, wastewater and stormwater, and launched a major re-evaluation of its CSO LTCP in 2009, three years before EPA published its Integrated Planning Framework in 2012. The updated CSO LTCP, which was approved by the Virginia Department of Environmental Quality (DEQ) in August 2014 and entered into the Special Consent Order with DEQ in 2015, will save Lynchburg more than \$220 million compared to the previous control plan and enabled Lynchburg to complete its CSO program within 10-15 years as opposed to over 40 years.

## CSO Program Overview and Status

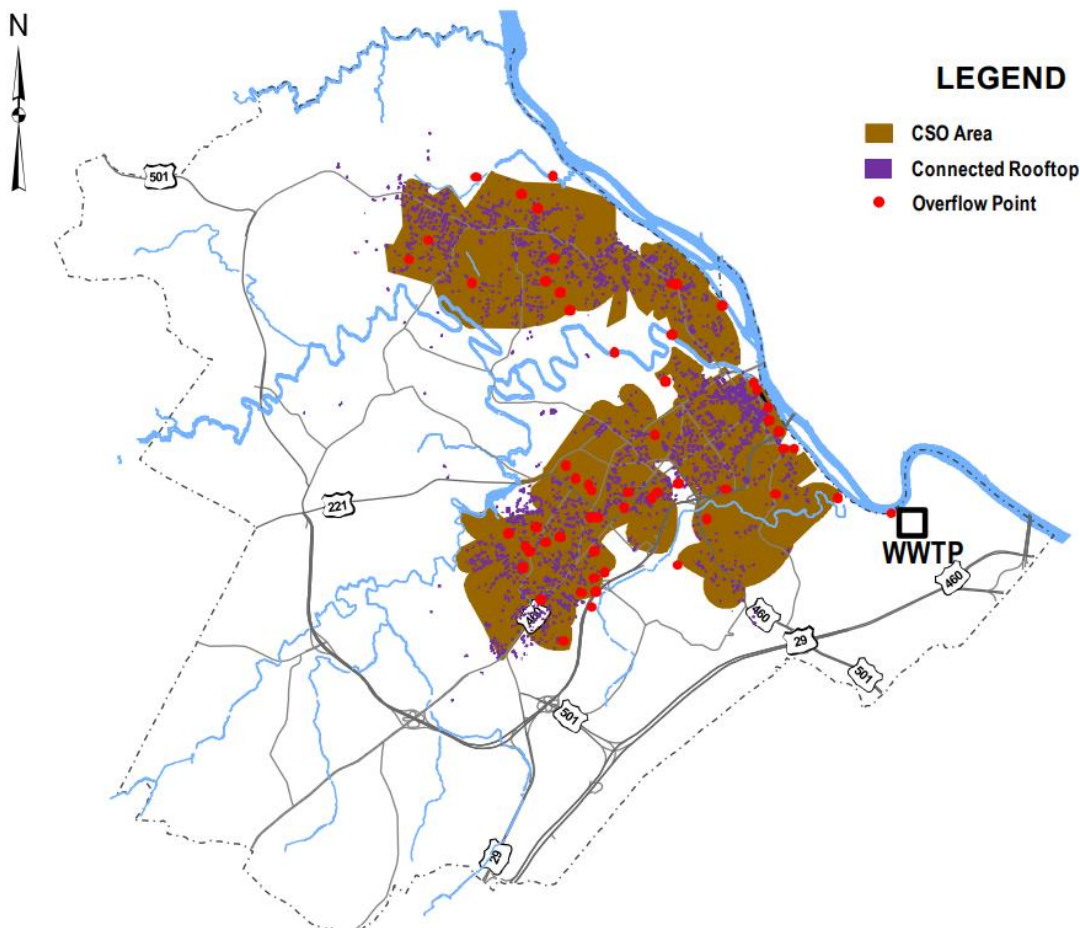
To date, since 1994, the City of Lynchburg has spent over \$300 million on the CSO Program. Over that same time period Lynchburg has spent another \$110 million on additional water quality projects.

<b>VCWRLF Loans</b>	<b>Local Cash Funding</b>	<b>State Grants</b>	<b>Federal Grants</b>	<b>Total</b>
\$169,000,000	\$47,000,000	\$68,000,000	\$22,000,000	\$307,000,000

Up until the 2014 CSO LTCP Update Final Report the CSO Program focused on Complete Separation, Interceptor Replacement, and Rain leader disconnection. Accomplishments to date:

- Reduced its combined sewer area from the original 6,000 acres to 950 acres as a result of numerous separation projects
- Closed 115 of its original 132 CSO outfalls
- Eliminated via separation or captured for treatment 93% of its combined sewage volume
- Completed approximately 30 miles of interceptor replacement
- Disconnected 220 acres (81%) of rooftops
- Doubled wet weather capacity of the Wastewater Treatment Plant to greater than 80 mgd

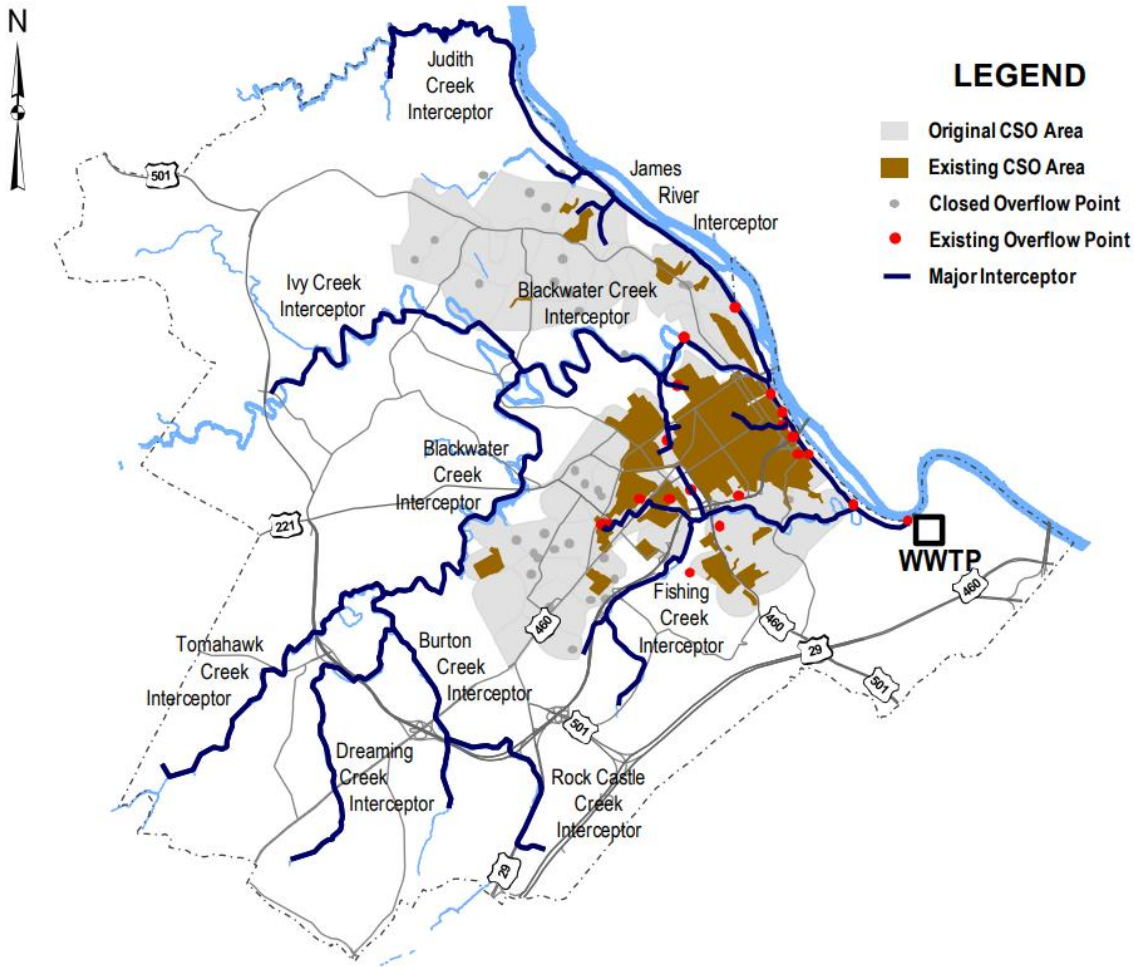
### Original CSO Area and Overflow Points



### Interceptor Replacement Projects

Priority	Project	Year Completed
1	Blackwater Creek Interceptor, Division 1 Blackwater Creek Interceptor, Division 2	1991
2	Fishing Creek Interceptor, Phase I Division 1	1992
3	Blackwater Creek Interceptor, Division 3 Blackwater Creek Interceptor, Division 4	1991 1994
4	Blackwater Creek Interceptor, Division 5	1994
5	Fishing Creek Interceptor, Phase I Division 2A Fishing Creek Interceptor, Phase I Division 2B	1992 1994
6	Blackwater Creek Interceptor, Division 8A	1994
7	Fishing Creek Interceptor, Phase I Division 3	1997
8	Fishing Creek Interceptor, Phase I Division 4	1997
9	Blackwater Creek Interceptor, Division 8B	1997
10	Ivy Creek Interceptor, Division 1A	1998
11	Ivy Creek Interceptor, Division 1B	1998
12	Ivy Creek Interceptor, Division 2	1999
13	Blackwater Creek Interceptor, Division 7	2000
14	Ivy Creek Interceptor, Division 3	1999
15	Blackwater Creek Interceptor, Division 6	2002
16	Fishing Creek Interceptor, Phase I Division 5	2000
17	James River Interceptor, Division 1	2009
18	James River Interceptor, Division 2	2011
19	Blackwater Creek Outfall – Meeting House Branch Interceptor	2008
20	James River Interceptor, Division 3A James River Interceptor, Division 3B	2015
21	James River Interceptor, Division 4 James River Interceptor, Division 5 James River Interceptor, Division 6	2013 2012 2011
22	Blackwater Creek Outfall – Monroe & 1 <sup>st</sup> Street Sanitary Replacement	2008
23	Pigeon Creek Interceptor, Phase I Pigeon Creek Interceptor, Phase II A Pigeon Creek Interceptor, Phase II B	2000 2004 2005
24	Fishing Creek Interceptor, Phase II – Kemper Street Spur	2011
	Ivy Creek Interceptor, Division 4A Ivy Creek Interceptor, Division 4B	1999
	Jefferson Park Interceptor (partial)–(Hillcrest Sewer Replacement #03076-S)	2005

## Remaining CSO Area and Overflow Points



## 2014 CSO LTCP Update

The 2014 CSO LTCP Update identified 10 remaining priority projects. The following are the projects identified and their current status:

- 1) James River Interceptor replacement - Complete
- 2) CSO 125 separation - Complete
- 3) CSO 61 control - Complete
- 4) Wet weather pumping facility - Complete
- 5) Storage facility - Complete
- 6) Wet weather disinfection at the WWTP - Complete
- 7) CSO 70 control – Under design
- 8) Controls for CSOs 33, 34, and 14 – Under design
- 9) CSO 52 control – Under design
- 10) Controls for CSOs 11, 15, 17, 62, 66, and 116 – CSO 66 complete

In addition to these projects, the City is also continuing the rain leader disconnection program and completing some small separation projects.



### Remaining CSO Program Spending and Schedule

The City of Lynchburg is developing preliminary engineering designs to complete the remaining projects in the 2014 LTCP (Special Order Projects 7, 8, 9 and 10) and as well as other CSO system optimization improvements. The estimated cost to complete these CSO projects approximately \$50 million, which includes the following components:

<b>Special Order Project No. 7 – “CSO 70 Control”</b> , including sewer separation of the combined sewer areas, replacement of existing interceptors, rehabilitation of existing sewers, and upgrade of CSO regulator for solids and floatable control	\$11,740,000
<b>Special Order Project No. 8 – “Controls for CSOs 14, 33, &amp; 34”</b> , including complete sewer separation of CSO 34, closure of CSO 34 outfall, partial separation of CSO 33, replacement and rehabilitation of existing interceptors, in-line flow equalization, stormwater inflow reduction, and upgrade of CSO regulators for solids and floatable control	\$6,620,000
<b>Special Order Project No. 9 – “CSO 52 Control”</b> , including interceptor capacity improvements, installation of new underground storage facilities, and upgrade of CSO regulator for solids and floatable control	\$27,480,000
<b>Special Order Project No. 10 – “Controls for CSOs 11, 15, 17, 62, 66, &amp; 116”</b> , including interceptor capacity improvements, potential flow equalization, upgrade of the CSO regulators for solids and floatable control	\$2,500,000
<b>Other CSO System Optimization Improvements</b> , including installation of green infrastructure at suitable locations to further reduce stormwater runoff entering the combined sewer system, installation of trash and sediment control at storm inlets where solids and floatable control is not feasible at the CSO outfall, implementation of real-time monitoring and control systems to optimize interceptor conveyance and inline storage as well as wet weather flow pumping operation	\$1,660,000
<b>Total Remaining CSO Projects</b>	<b>\$50,000,000</b>

With adequate funding the projects can be completed within the next five years.

## CSO Program Impact on Rate Payers

The City of Lynchburg ranks 7<sup>th</sup> of all localities in the State for fiscal stress the latest Department of Housing and Community Development report. The following summarizes the impacts of the CSO Program to the community:

- Median household income of just over \$43,000
- Poverty rate of 19.5%
- Sewer rates historically among the highest in the state
- Average annual sewer bill typically being greater than 1.3% of the median household income
- Over \$17,600 per household on the CSO program
- 4,252 households (24%) have sewer bills that exceed 4% of their household income with many of these households being in minority areas of the City
- Additional \$2,875 per household remaining to be spent to complete the program

## CSO Program's Environmental Benefits

Lynchburg's plan not only meets the presumptive approach of EPA's CSO policy by greatly exceeding the 85% capture criteria (greater than 95%) but also meets the demonstrative approach by meeting all water quality based requirements of the Clean Water Act. The region has embarked on developing a Middle James River Vision Plan with stakeholders from Lynchburg and surrounding counties, The Central Virginia Planning District Commission, the James River Association and the National Parks Services to enhance the recreational use of the James River including swimming, boating, and fishing. Completion of the City of Lynchburg's CSO Program is a critical component of that plan.



Upon completion the remaining projects in the Long-Term Control Plan the following water quality benefits will be achieved:

- Closing one additional CSO outfall (CSO 34).
- Reducing the number of overflow events at 12 of the 16 remaining CSO outfalls to less than 4 times in a typical year.
- Capturing more than 95% of the combined sewage volume for treatment at the wastewater treatment plant in a typical year.
- Providing solids and floatable control at all remaining CSO outfalls.
- Significantly reducing overflows in Blackwater Creek Park near a highly utilized public trail.
- Exceeds the goals of the James River Bacteria TMDL Implementation Plan

With funding support, Lynchburg expects to complete the remaining CSO projects within the next five years and advance the CSO program to the post-construction compliance monitoring phase. Lynchburg has developed a CSO post-construction monitoring program work plan which was approved by Virginia DEQ in 2020 and will include the post-construction monitoring requirements in its next NPDES permit effective in 2021.

### **Specific Funding Needs**

The City of Lynchburg is facing significant infrastructure challenges with aging water and sewer systems with hundreds of miles of lines over 100 years old. It is estimated that over the next 20 years the City needs to invest nearly \$500 million in water and sewer infrastructure. The City of Lynchburg is requesting financial assistance to help minimize additional financial stress on our rate payers.

\$50 million to complete the CSO Program within the next 5 years.