



**SENATE COMMITTEE ON NATURAL  
RESOURCES AND ENERGY**

**ECHO CENTER, BURLINGTON**

**SEPTEMBER 19, 2018**

**1:00 – 4:00PM**





# **LAY OF THE LAND: A HISTORICAL PERSPECTIVE ON CSOS AND UNTREATED DISCHARGES AND CURRENT LANDSCAPE**

- **MARY L. BORG, DEPUTY DIRECTOR, WATERSHED  
MANAGEMENT DIVISION, VERMONT DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION (DEC)**
    - GENERAL OVERVIEW OF CSOS
    - REGULATORY HISTORY
    - EPA REGULATIONS
    - VERMONT RESPONSE
- 



# **LAY OF THE LAND: A HISTORICAL PERSPECTIVE ON CSOS AND UNTREATED DISCHARGES AND CURRENT LANDSCAPE**

- **JESSICA BULOVA, WASTEWATER PROGRAM MANAGER,  
WATERSHED MANAGEMENT DIVISION, VERMONT DEC**
    - VT ANR COMBINED SEWER OVERFLOW RULE 2016
    - REPORTING DISCHARGES ON DEC WEBSITE
    - 1272 ORDERS FOR 14 MUNICIPALITIES (ON-GOING  
PROCESS)
    - LAKE CHAMPLAIN TMDL AND CSOS
- 

# ACRONYMS

- CSO = COMBINED SEWER OVERFLOW
- CSS = COMBINED SEWER SYSTEM
- CWA = CLEAN WATER ACT
- CWSRF = CLEAN WATER STATE REVOLVING FUND
- LTCP = LONG TERM CONTROL PLAN
- NPDES = NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
- SSO = SANITARY SEWER OVERFLOW
- TMDL = TOTAL MAXIMUM DAILY LOAD
- WQS = WATER QUALITY STANDARDS
- WWTF = WASTE WATER TREATMENT FACILITY
- 1272 = ENFORCEMENT ORDER ISSUED UNDER SECTION 1272 OF TITLE 10 OF VERMONT STATUTES ANNOTATED (10 V.S.A. 1272)



# WHAT IS A COMBINED SEWER SYSTEM?

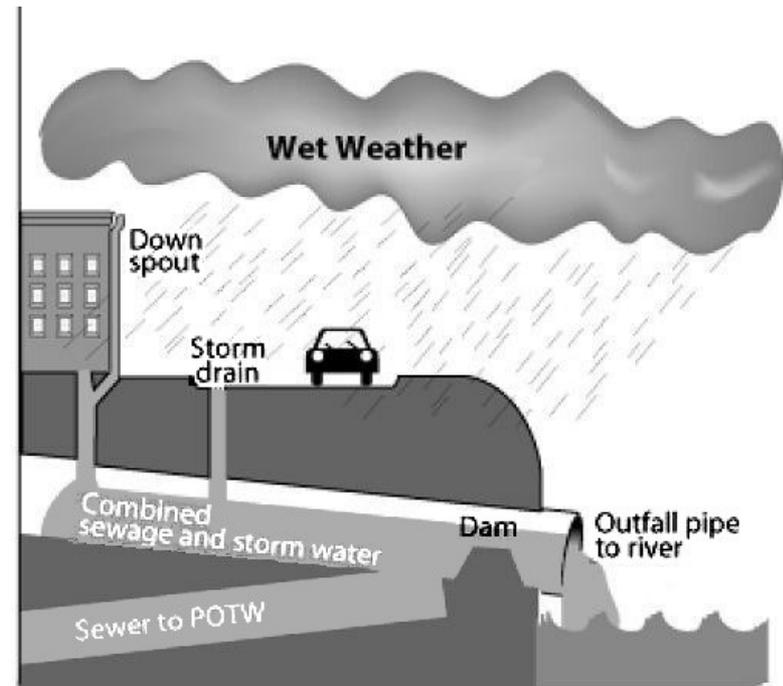
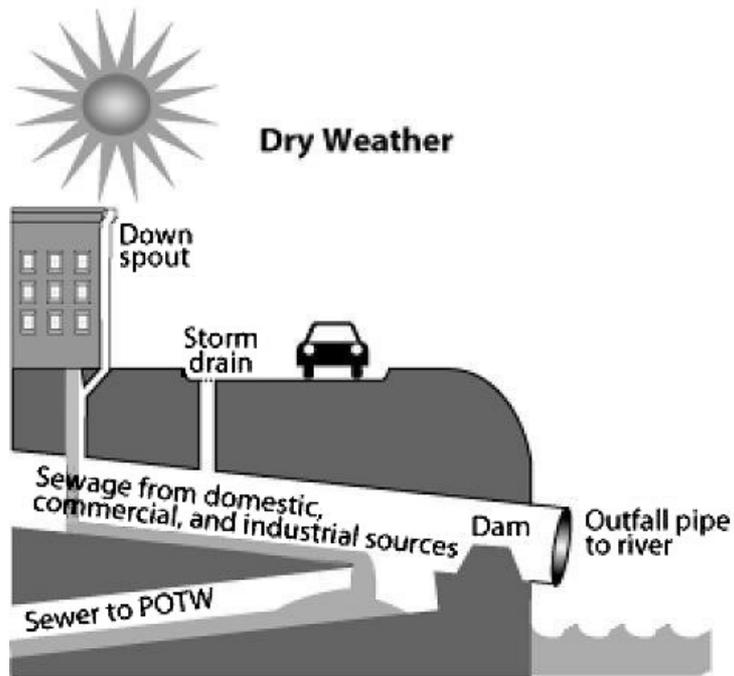
- COMBINED SEWER SYSTEMS (CSS) ARE SEWERS THAT ARE DESIGNED TO COLLECT STORMWATER RUNOFF, DOMESTIC SEWAGE, AND INDUSTRIAL WASTEWATER IN THE SAME PIPE
  - THESE SYSTEMS ARE HISTORIC INFRASTRUCTURE NOT ALLOWED TODAY
- 



# WHAT IS A COMBINED SEWER OVERFLOW?

- DURING PERIODS OF HEAVY RAINFALL OR SNOWMELT, THE VOLUME OF COMBINED STORMWATER/WASTEWATER/INDUSTRIAL WASTE CAN EXCEED THE PIPE CAPACITY
  - COMBINED SEWER OVERFLOWS (CSO) ARE DESIGNED TO DISCHARGE STORMWATER/WASTEWATER DIRECTLY TO NEARBY WATER BODIES TO AVOID BACKUPS AND PLANT FAILURE
- 

# COMBINED SEWER OVERFLOWS (CSOS)



# WHY THE CONCERN?



**Public Health  
Concern - CSO  
discharges contain  
untreated wastes and  
stormwater  
runoff containing  
pathogens, toxics,  
debris, oil**

**Risk of Contact  
During Recreation**



**Environmental  
impact -  
Impair aquatic  
habitat  
Violate Water  
Quality Standards**



**Public  
Safety Issues -  
Overflowing  
manholes,  
basements flooded**

# CSOS HELP TO PREVENT DANGEROUS CONDITIONS



*A car exits Church Street in downtown Rutland as a manhole erupts with rainwater following a flash flood late Monday afternoon. Below, Rebecca Buonadonna sweeps storm debris outside her Fruition store on the corner of West Street and Merchants Row. ROBERT LAYMAN / STAFF PHOTOS*



# CHARACTERISTICS OF A CSO DISCHARGE

- **MOST OF THE DISCHARGE IS NOT SEWAGE**
    - 99.9% OF RESIDENTIAL DRY WEATHER SEWAGE IS WATER
    - CSO RELEASES = 95% STORMWATER (ON AVERAGE )
  - **VARIABLE DEPENDING ON INTENSITY OF STORM**
  - **TIME OF EVENT – DAY OR NIGHT**
  - **ANTECEDENT CONDITIONS IMPACTS DISCHARGE COMPOSITION**
- 



# WHAT IS AN SSO?

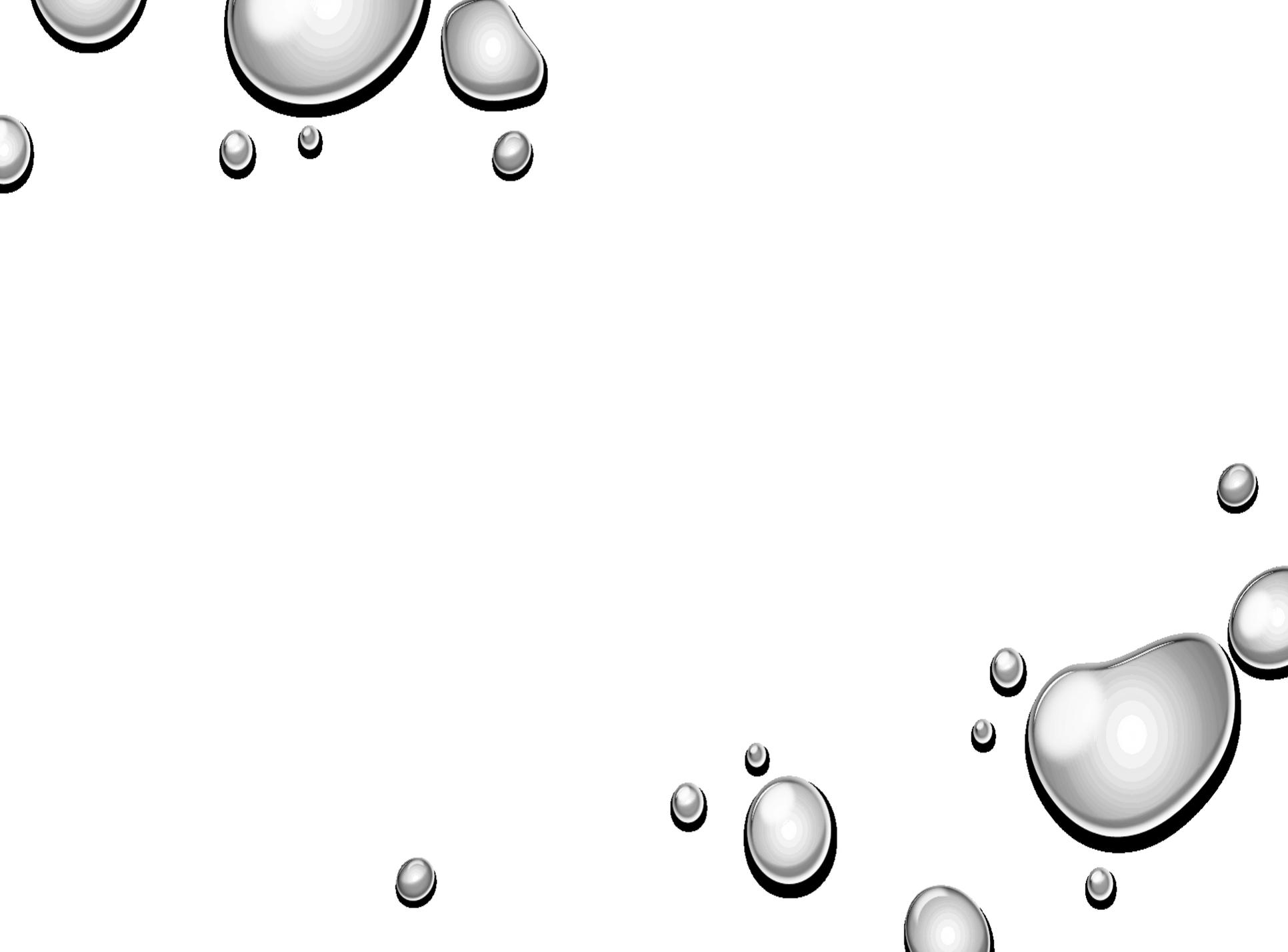
- **WHAT IS AN SSO?**

- A DRY WEATHER DISCHARGE FROM CAUSED BY EVENTS OTHER THAN RAINFALL, SUCH AS GROUNDWATER INFILTRATION, CLOGGED SEWER PIPES, ACTS OF VANDALISM, ILLEGAL DISCHARGES
  - THESE DRY WEATHER DISCHARGES ARE **STRICTLY PROHIBITED**
  - CSO DISCHARGES POSE LESS RISK THAN A SSO DUE TO DILUTION AND HIGHER FLOWS IN RECEIVING WATERS
- 



# CSOS = NATIONAL ISSUE

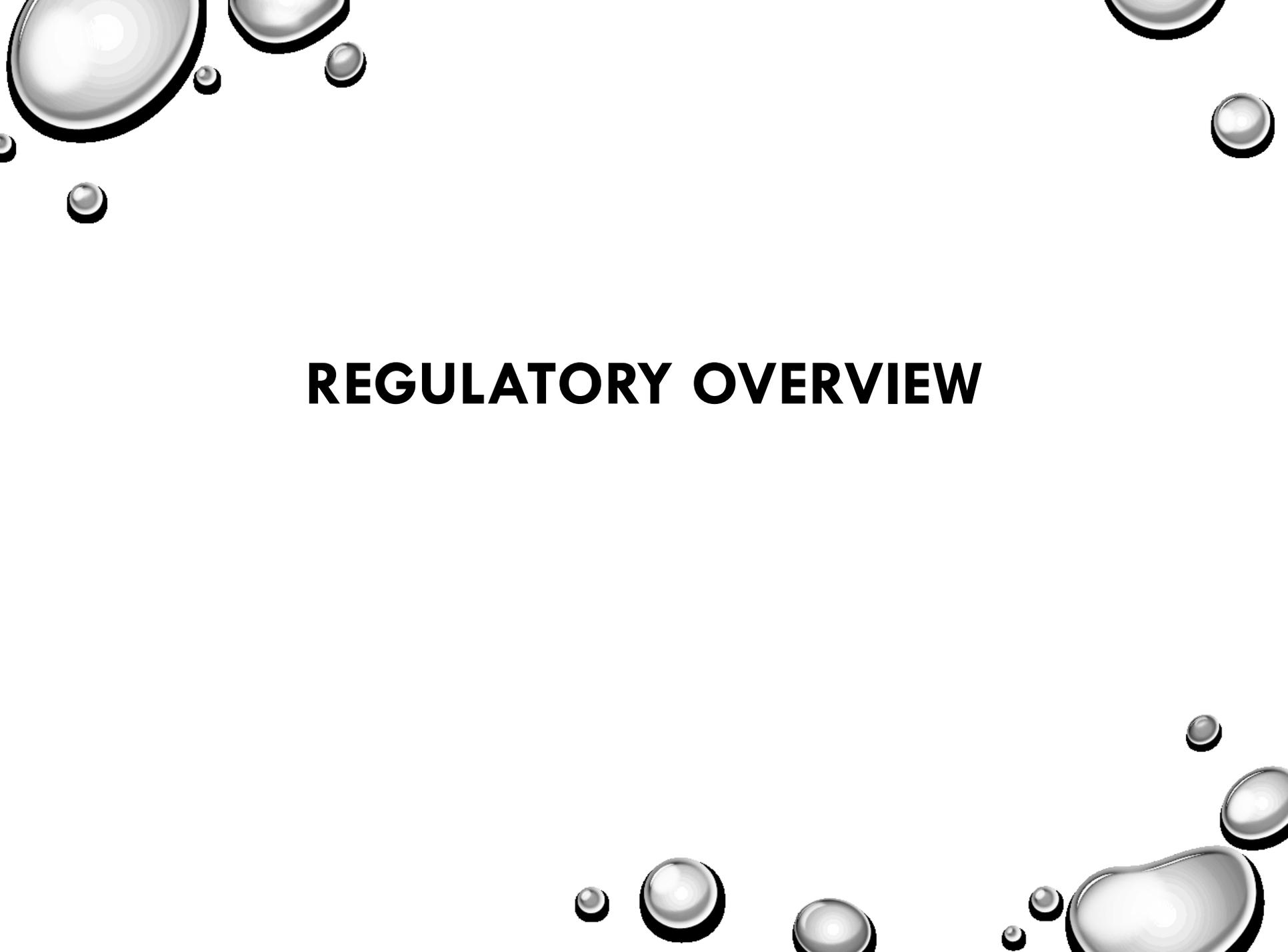
- COMBINED SEWER OVERFLOWS EFFECT APPROXIMATELY 772 CITIES AND 40 MILLION PEOPLE IN THE UNITED STATES.
  - **EPA CALLS CSOS “ THE LARGEST CATEGORY OF OUR NATION’S WASTEWATER INFRASTRUCTURE THAT STILL NEEDS TO BE ADDRESSED”**
  - EFFORTS UNDERWAY ACROSS THE NATION TO REDUCE CSO EVENTS USING:
    - **GRAY INFRASTRUCTURE**
    - **GREEN INFRASTRUCTURE**
    - **DATA INFRASTRUCTURE**
- 





# **WHY DO CSOS STILL EXIST?**

- **DIFFICULT TO ELIMINATE AND TREAT**
  - **EXPENSIVE \$\$**
  - **COMPETING WATER QUALITY PRIORITIES**
    - **TMDL IMPLEMENTATION**
    - **STORMWATER TREATMENT**
    - **WWTF UPGRADES**
  - **EASIEST HAVE BEEN ELIMINATED; MOST DIFFICULT REMAIN**
- 

The page features several realistic, 3D-rendered bubbles of various sizes. They are positioned in the corners: a cluster in the top-left, a single one in the top-right, and a group in the bottom-right. The bubbles have highlights and shadows, giving them a metallic or glass-like appearance.

# **REGULATORY OVERVIEW**

1800s – 1960s

Many sewer systems are old and go directly into rivers and streams, these are known as “straight pipes”

1972

The clean water & federal grants supported construction of sewers & WWTFs. Overflows installed in combined sewers.

1989

EPA issues first CSO Policy – asks for states to develop State-wide CSO policies

1990

Vermont issues CSO Policy and CSO abatement begins under orders and voluntarily

1994

EPA issues more comprehensive CSO policy

2000

Federal Clean Water Act amended to address CSOs – 1994 EPA CSO Policy is **no longer discretionary**

2016

Vermont issues the Vermont CSO Rule



# EPA ISSUES 1989 CSO POLICY

- EPA'S FIRST PUSH TO REQUIRE CONTROL OF CSOS
  - CALLED FOR EACH STATE TO DEVELOP **STATE-WIDE CSO STRATEGY** BY JANUARY, 1990
  - **THREE OBJECTIVES:**
    - ENSURE CSO DISCHARGES ONLY OCCUR IN WET WEATHER
    - BRING CSOS INTO COMPLIANCE WITH TECHNOLOGY BASED STANDARDS AND STATE WATER QUALITY STANDARDS
    - MINIMIZE CSO IMPACTS ON WATER QUALITY, HUMAN HEALTH, AQUATIC LIFE
- 



# EPA 1989 CSO POLICY

- REQUIRES **IDENTIFICATION** OF ALL CSO OUTFALLS
  - EXPECTS STATES TO **SET PRIORITIES** IN CSO CONTROL
  - CSOS MUST BE ADDRESSED IN NDPES PERMITS; USE ORDERS WITH COMPLIANCE SCHEDULES AS NEEDED
- 



# VERMONT ISSUES 1990 CSO POLICY

- REQUIRED 1272 ORDERS BE ISSUED WITH WWTF PERMITS
  - ESTABLISHED MINIMUM TECHNOLOGY BASED REQUIREMENTS, INCLUDING MONITORING REQUIREMENTS
  - **CSO ABATEMENT BEGINS UNDER ORDERS AND ON A VOLUNTARY MUNICIPAL BASIS**
  - **STATE FUNDING MADE AVAILABLE**
- 



# EPA ISSUES 1994 CSO POLICY

- **FOUR KEY PRINCIPLES:**

- PROVIDING SUFFICIENT **FLEXIBILITY** TO MUNICIPALITY, ESPECIALLY FINANCIALLY DISADVANTAGED MUNIS
  - DETERMINE MOST **COST EFFECTIVE** MEANS OF REDUCING POLLUTANTS
  - STRATEGIES SHOULD BE **SITE-SPECIFIC**
  - WILL **WATER QUALITY STANDARDS BE MET AND USES PROTECTED?**
- 



# EPA 1994 CSO POLICY

- LONG TERM CONTROL PLANS REQUIRED:
    - **IMPLEMENTATION OF 9 MINIMUM CONTROLS**
    - **IDENTIFY RANGE OF REASONABLE CSO CONTROLS**
- 



# EPA 1994 CSO POLICY

- **LONG TERM CONTROL PLAN MAY BE PHASED BASED ON:**
  - THE RELATIVE IMPORTANCE OF ADVERSE IMPACTS
  - A PERMITTEE'S FINANCIAL CAPABILITY (EPA ISSUED FINANCIAL CAPABILITY ASSESSMENT GUIDANCE)





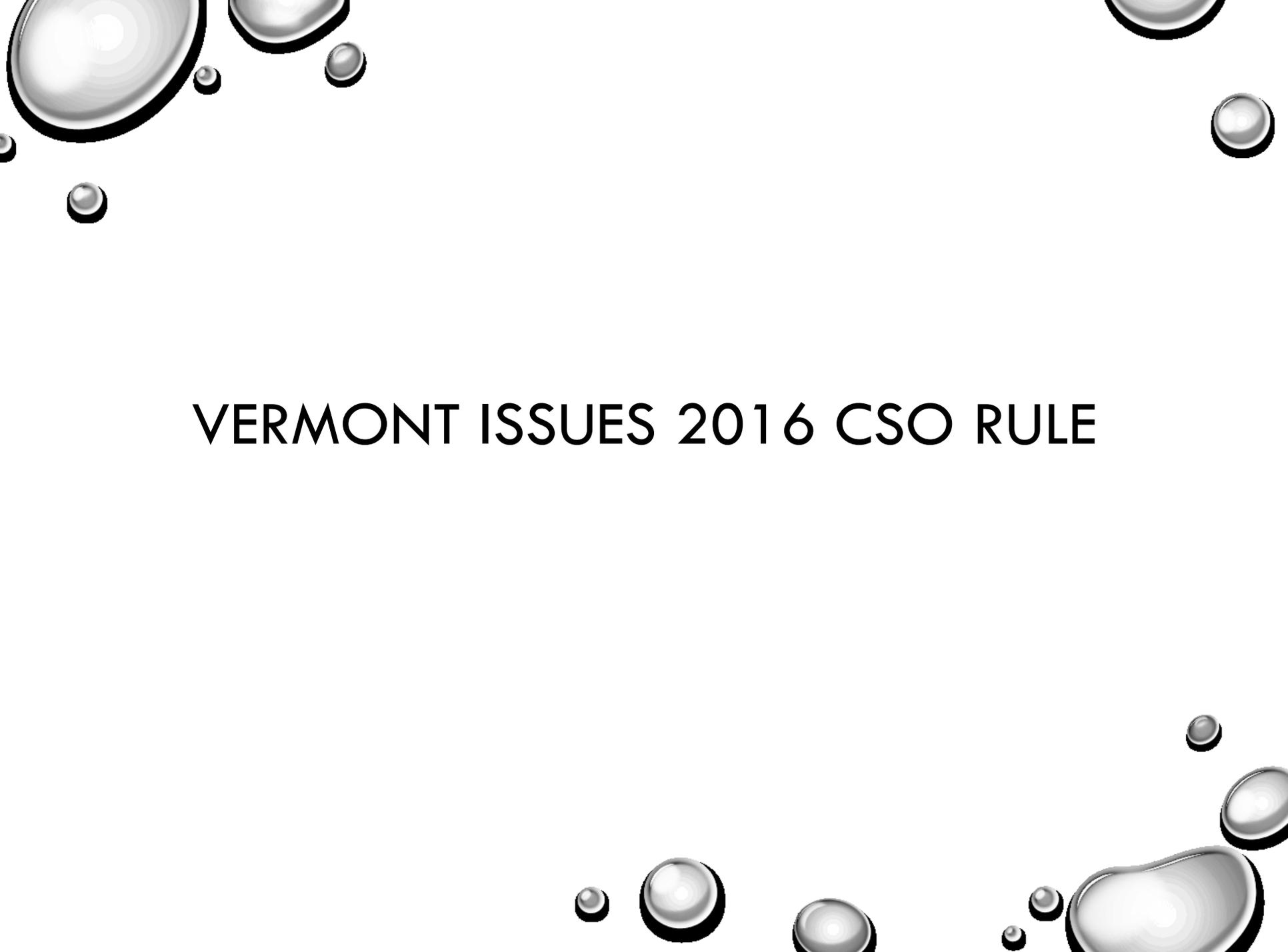
# EPA 1994 CSO POLICY

- PRIORITY TO BE GIVEN TO SENSITIVE AREAS AND CSOS THAT CAUSE IMPAIRMENT OF USES
  - TIMING: ENFORCEABLE SCHEDULES OF COMPLIANCE SHOULD REQUIRE THE “**EARLIEST PRACTICABLE COMPLIANCE DATE**” CONSIDERING PHYSICAL AND FINANCIAL FEASIBILITY
  - EPA RECOGNIZES ELIMINATION OR CONTROL MAY TAKE DECADES
- 



DECEMBER 2000  
AMENDMENT TO FEDERAL CWA

- **CONGRESS AMENDS CLEAN WATER ACT:**
    - EACH PERMIT, ORDER OR DECREE ISSUED FOR A DISCHARGE FROM A COMBINED MUNICIPAL STORMWATER AND SANITARY SEWER SHALL CONFORM TO EPA'S 1994 CSO POLICY
    - **EPA'S 1994 CSO POLICY IS NO LONGER DISCRETIONARY**
- 

The page features several decorative bubbles of varying sizes and shades of gray, positioned in the corners. The top-left corner has a large bubble and several smaller ones. The top-right corner has a large bubble and a smaller one. The bottom-right corner has a large, irregularly shaped bubble and several smaller ones. The bottom-center has a medium-sized bubble and a smaller one. The text is centered in the middle of the page.

# VERMONT ISSUES 2016 CSO RULE

REGULATORY  
HISTORY –  
COMMON  
THEMES

Must Meet  
minimum  
technology  
based limits  
and Water  
Quality  
Standards

Use most cost  
effective  
controls

CSO work is an  
iterative  
process

Financial  
capability of  
municipality  
considered in  
timing

REGULATORY  
HISTORY –  
COMMON  
THEMES

NPDES permits  
and enforceable  
orders should be  
used to guide  
CSO work

Dry weather  
discharges from  
CSO outfalls are  
illegal

States may  
adjust water  
quality  
standards if  
desired to  
address  
CSOs;  
process  
provided in  
federal  
regulations



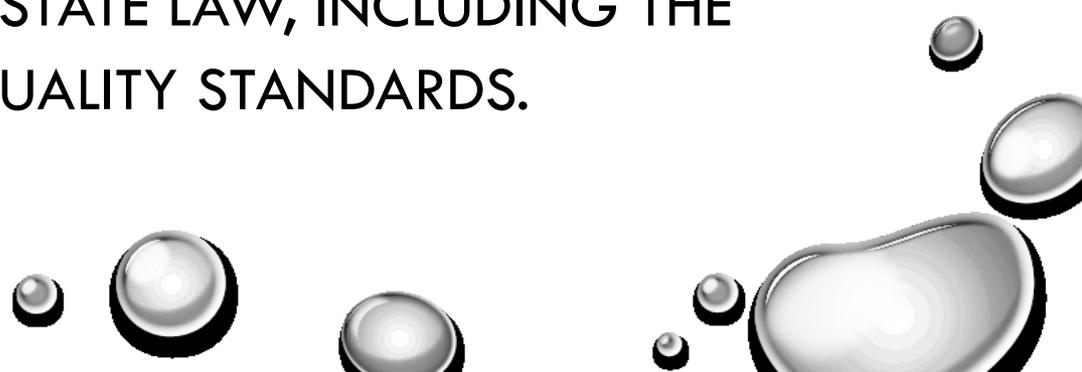
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- 



# COMBINED SEWER OVERFLOW RULE

SEPTEMBER 2016

- THIS RULE SUPERSEDED THE “COMBINED SEWER OVERFLOW CONTROL POLICY” FROM JUNE 1990
  - THE GOAL IS TO PROTECT PUBLIC HEALTH AND THE ENVIRONMENT BY ENSURING THAT ALL REMAINING CSOS IN VERMONT ARE BROUGHT INTO COMPLIANCE WITH FEDERAL AND STATE LAW, INCLUDING THE VERMONT WATER QUALITY STANDARDS.
- 

# 2018 Reporting Requirements

- Public Alert Notification as soon as possible, but within one-hour, but no later than four hours after the discovery of a CSO to the Sewage Overflows and Incidents Public Webpage
- Submit an incident report within 12 hours to the Agency

Address: <https://anrweb.vt.gov/DEC/WWInventory/SewageOverflows.aspx>



VERMONT OFFICIAL STATE WEBSITE VERMONT

Vermont Watershed Management in DEC at ANR

Sewage Overflows and Incidents Reported in Date Range

[Subscribe to alerts and notifications!](#) - Subscribe here to receive email or text notifications when new public alerts, sewer overflow and release incident reports, or unpermitted discharges are reported.

Enter values to look for and press SEARCH to find matches  
Incident Start Date Between: 01/01/2017 and 02/01/2017

NOTE: This page displays four sets of data:  
Public Alerts  
Newly Reported Overflows  
Authorized Wet Weather Combined Sewer Overflows  
All Other Overflows

The following are **Public Alerts** submitted by Wastewater Treatment Facilities for prompt public awareness of untreated discharges and their locations. These alerts have been directly reported by Wastewater Treatment Facilities and may have not yet been reviewed by the Date. Wastewater Treatment facilities are required to submit a public alert as soon as possible, but no longer than one hour from discovery of an untreated discharge from the wastewater treatment facility. This time requirement is extended to no longer than four hours if the operator does not have telephone or internet service at the location or they are working to control or stop the untreated discharge. Additional details regarding sewage overflows and incidents are required to be reported within 12 hours of discovery and available below.

Facility Name	Town	Location Description	Receiving Waters	Date/Time	Submission Entered	ID
Burlington River	Burlington	Near 246 Riverside Ave	Winooski river	1/26/2017 11:04:25 AM		55
St Johnsbury	St Johnsbury	Intersection of route 2 and 2b adjacent to maplefields truck stop	sleepers river	1/6/2017 3:03:34 PM		54

**NEWLY REPORTED OVERFLOWS.** These overflows are pending review from DEC Wastewater staff

Start Date	End Date	Start Time	End Time	Location	Waterbody	Nature of Incident	Estimated Volume (gallons)	Wastewater Treatment Facility	Contact Person	Submission Number
01/26/2017	01/26/2017	10:15 am	12:15 pm	Near 246 Riverside Ave	Winooski River	Discharged untreated sewage	Under 100 gallons	Burlington River	Megan Moir, Assistant Public Works Director	2NW-CJ4Q-TQWS
01/05/2017	01/05/2017	07:00 am	08:00 am	336 Clearwater Blvd	Clarendon River	Discharged treated and partially dewatered effluent	1,000 to 10,000 gallons	Wetland	Edward J. Savage, Chief Operator	2NC-NAVM-H5K4

**WET WEATHER COMBINED SEWER OVERFLOWS** Reviewed by DEC Wastewater staff

No Records Found in Date Range

**ALL OTHER OVERFLOWS** Reviewed by DEC Wastewater staff

Start Date	End Date	Start/End Times	Municipality	Location	Waterbody	Nature of Incident	Estimated Volume (gallons)	Wastewater Treatment Facility	Contact Person	Submission Number	ID
2017-01-05	2007-01-06		St Johnsbury	Intersection of rt 2 and 2b, near Mt Vernon Street bridge	Sleepers River	Discharged untreated sewage	~1,000 to 10,000 gallons	St Johnsbury	Hugh Wescott, Public Works Director	2NC-QUX-CROH	3123

Vermont Watershed Management in DEC at ANR

Return

Newly Reported Overflow

Facility Name:

Facility Number:

Permit ID:

Submission Number: 2NW-CJ4Q-TQWS

Current Status: Submitted

SubVersionID: 4950e74d-bec8-4610-bd15-9e50f558c2db

Location: Near 246 Riverside Ave

Caller Name And Title: Matt Dow Chief Operator

Incident Start Date: 01/26/2017

Incident End Date: 01/26/2017

Contact Name And Title: Megan Moir, Assistant Public Works Director

Public Contact Phone Number: 802-863-4501

Incident Start Time: 10:15 am

Incident End Time: 12:15 pm

Estimated Volume: Under 100 gallons

Nature Of Incident: Discharged untreated sewage

Cause Of Discharge: Other - Please describe in Description of Incident

Type Of Obstruction:

Point Of Discharge: Stormwater collection system

Corrective Action Taken: The hole in the manhole was repaired.

Waterbody Impacted: Winooski River

Description Of Incident: A hole was discovered in the bottom of a sanitary manhole after sediment and grease was removed during cleaning. In very close proximity to the manhole is a perforated storm pipe/underdrain connected to the City's separate storm sewer system. A small amount of sewage leaked into the storm system between when the grease was removed and the manhole was repaired.

# CSO Events in 2016, 2017 and 2018

Facility Name	Wet weather CSO Overflows 2016	Wet weather CSO Overflows 2017	Wet weather CSO Overflows 2018 as of 9/1/18	# of Outfalls
<b>Burlington Main</b>	<b>5</b>	<b>10</b>	<b>11</b>	<b>3</b>
<b>Burlington East/River</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
<b>Burlington North</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
Enosburg Falls	0	0	0	1
<b>Fair Haven</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>1</b>
<b>Hartford / White River Junction</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>5</b>
<b>Middlebury</b>	<b>2</b>	<b>7</b>	<b>2</b>	<b>4</b>
<b>Montpelier</b>	<b>14</b>	<b>44</b>	<b>18</b>	<b>6</b>
Newport City	0	0	0	6
<b>Northfield</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>1</b>
Richford	0	CSOs eliminated	NA	NA
<b>Rutland</b>	<b>84</b>	<b>83</b>	<b>72</b>	<b>4</b>
<b>Springfield</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>
<b>St. Johnsbury</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>15</b>
<b>St. Albans</b>	<b>4</b>	<b>10</b>	<b>3</b>	<b>1</b>
<b>Vergennes</b>	<b>7</b>	<b>4</b>	<b>3</b>	<b>1</b>
Woodstock Main	0	0	0	1

## 2016 REQUIREMENTS (CONTINUED)

- The CSO Rule requires that if a WWTF is not in compliance, the Agency shall issue an order pursuant to 10 V.S.A. Section 1272 or another legally enforceable mechanism.
- The Rule requires the Agency issue the 1272s at the same time as the renewed NPDES Permit.
- Under the 1272 Order, the municipality must develop or update a Long Term Control Plan (LTCP) to abate and control its CSOs and provide for the attainment of the Vermont Water Quality Standards.
- Once the LTCP is approved the Agency will issue another 1272 Order with a compliance schedule.

# 2016 CSO Requirements (continued)

- Alternatives considered under Long Term Control Plan:
  - Installing flow metering system for each outfall;
  - Reducing stormwater flows through the separation of combined Stormwater and sanitary sewer lines;
  - Adding storage tanks or retention basins to hold overflow during storm events;
  - Expanding the treatment plant capacity
  - Adding screening and disinfection facilities for the overflow
  - Incorporating green Stormwater infrastructure to reduce Stormwater flow into CSSs to the greatest extent feasible and practical; and
  - Providing for disinfection of CSOs at the outfall and discharge to a waste management zone

# 1272 or EPA Orders Issued to Date

Facility Name	Receiving Water	# of Outfalls	New 1272 or Order of Consent Issued
Burlington Main	Lake Champlain	3	<b>Currently in Legal Review</b>
Burlington East/River	Winooski River	1	
Burlington North	Winooski River	1	
Enosburg Falls	Missisquoi River	1	X
Fair Haven	Castleton River	1	
Hartford / White River Junction	Connecticut River	5	X
Middlebury	Otter Creek	4	X
Montpelier	Winooski River	6	X
Newport City	Clyde River	6	
Northfield	Dog River	1	
Rutland	Otter Creek	4	X
Springfield	Black River	2	X
St. Johnsbury	Passumpsic River	15	X
St. Albans	Lake Champlain via contiguous wetlands - Stevens Brook	1	X
Vergennes	Otter Creek	1	X
Woodstock Main	Ottaquechee River	1	

# COMBINED SEWER OVERFLOW CONTROL POLICY

JUNE 1990

Municipality/WWTF	1990s
Barton	7
Brandon	3
Burlington Main	5
Burlington East	1
Burlington North	1
Enosburg	2
Fair Haven	2
Hardwick	2
Hartford WRJ	5
Ludlow	1
Lunenburg	1
Lyndon	5
Middlebury	9
Montpelier	15
Newport (City)	21
Northfield	2
Poultney	4
Randolph	2
Richford	2
Rutland	6
St. Albans	6
St. Johnsbury	24
Springfield	29
Swanton	6
Wilmington	2
Windsor	9
Vergennes	2
Winooski	2
Woodstock	2
<b>29</b>	<b>178</b>

Municipality/WWTF	2015
Barton	1
Burlington Main	3
Burlington East	1
Burlington North	1
Enosburg	1
Fair Haven	2
Hartford WRJ	5
Middlebury	4
Montpelier	6
Newport (City)	6
Northfield	1
Randolph	1
Richford	2
Rutland	4
St. Albans	1
St. Johnsbury	17
Springfield	14
Vergennes	2
Woodstock	1
<b>19</b>	<b>73</b>

# PROGRESS SINCE IMPLEMENTATION OF 2016 RULE

Municipality/WWTF	2015
Barton	1
Burlington Main	3
Burlington East	1
Burlington North	1
Enosburg	1
Fair Haven	2
Hartford WRJ	5
Middlebury	4
Montpelier	6
Newport (City)	6
Northfield	1
Randolph	1
Richford	2
Rutland	4
St. Albans	1
St. Johnsbury	17
Springfield	14
Vergennes	2
Woodstock	1
<b>19</b>	<b>73</b>

Municipality/WWTF	2018
Burlington Main	3
Burlington East	1
Burlington North	1
Enosburg	1
Fair Haven	1
Hartford WRJ	5
Middlebury	4
Montpelier	6
Newport (City)	6
Northfield	1
Rutland	4
St. Albans	1
St. Johnsbury	15
Springfield	2
Vergennes	1
Woodstock	1
<b>16</b>	<b>53</b>

# LAKE CHAMPLAIN TMDL AND CSOS

- Lake TMDL Focus = Phosphorus (P)
- WWTF Discharges = < 4% of P Load
- CSO discharges are a fraction of 4%
  - CSO discharges have an average phosphorus concentration of 0.7mg/L, less than 6 pounds of phosphorus per million gallons of overflow.
  - Total amount of phosphorus each year is nearly 2 million pounds



# LAKE CHAMPLAIN TMDL AND CSOS

- St. Albans \$18 million upgrade, of which \$3,656,400 is going towards phosphorus reduction
- Chemical additions for phosphorus removal can be costly:
  - Two South Burlington Facilities spent over \$95,000 in 2017
  - Montpelier spent over \$73,000 in 2017
- Does not include additional costs for pump maintenance or sludge removal, which increase due to the chemical additions



# STATE LOAN AND GRANT PROGRAMS

## **TERISA THOMAS**

WATER INFRASTRUCTURE FINANCE SUPERVISOR,

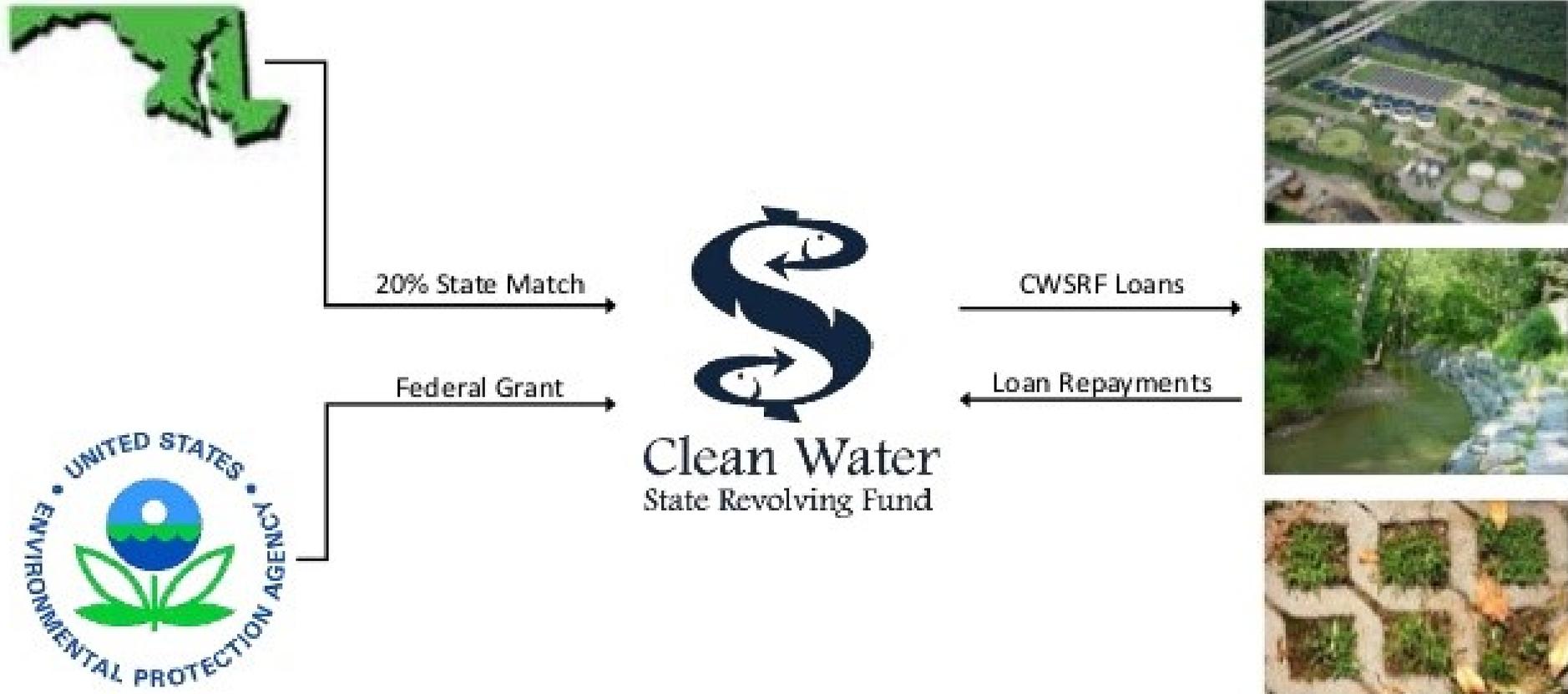
FACILITIES ENGINEERING DIVISION,

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION



# WHAT IS THE CLEAN WATER STATE REVOLVING FUND (CWSRF)?

## What is the CWSRF?



# HOW DEC PRIORITIZES PROJECTS

- CHAPTER 2 ENVIRONMENTAL PROTECTION RULE, PROJECTS ARE ASSESSED FOR MORE THAN 100 CRITERIA POINTS IN THE FOLLOWING CATEGORIES:
  1. PUBLIC HEALTH
  2. WATER QUALITY
  3. REFURBISHMENT (RESTORATION OF EXISTING INFRASTRUCTURE)
  4. RESILIENCY & SUSTAINABILITY
  5. DESIGNATED CENTER (IS IT PROMOTING “SMART GROWTH”?)
  6. AFFORDABILITY
  7. PROJECT READINESS
  8. FISCAL SUSTAINABILITY AND COST-EFFECTIVENESS OF PROJECT
- THE HIGHER THE POINTS, THE HIGHER THE PC GRANT



# ESTIMATING 20-YEAR COSTS FOR CSOS

**LYNNETTE CLAUDON, PE**

CHIEF POLLUTION CONTROL DESIGN ENGINEER,

FACILITIES ENGINEERING DIVISION,

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION



# Total Vermont CSO Investment (Since ~1980)

## \$120M

Funding Source	Funding
Clean Water State Revolving Fund Loans	\$64M*
Vermont Pollution Control Grants	\$33M
Other Grants & Loans	\$9M
Local Share (Out of pocket)	>\$14M**

\* Loans are repaid by municipalities

\*\*Estimated

# VERMONT CSO INVESTMENT SINCE 2013: **\$26.3M**

Funding Source	Funding
Clean Water State Revolving Fund Loans	\$15.9M*
Vermont Pollution Control Grants	\$3.8M
Other Grants & Loans	\$5.4M
Local Share (Out of pocket)	\$1.2M**

\* Loans are repaid by municipalities

\*\* Estimated

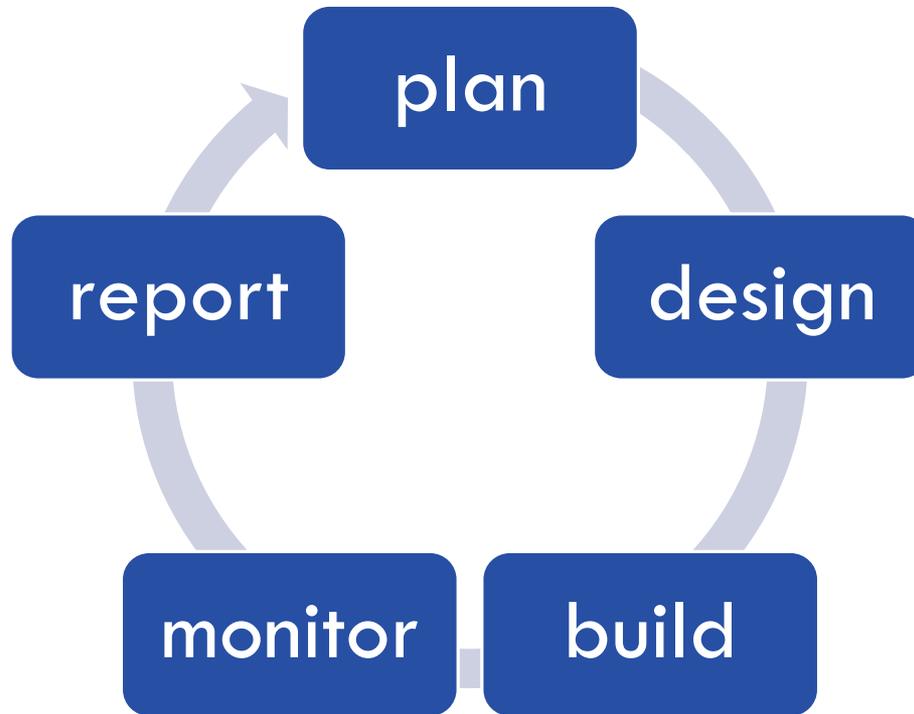
# FUTURE VERMONT CSO INVESTMENT

NOTE: COSTS ARE PRELIMINARY ESTIMATES ONLY,  
 MOST MUNICIPALITIES HAVE NOT COMPLETED LONG TERM CONTROL PLANS

	Near Term	Long Term
MONITORING	\$500,000	\$1,000,000
REPORTS	\$500,000	unknown
SEPARATION		
- SEWER/STORM*	\$10,500,000	\$110,000,000
- ROOF DRAINS	\$0	\$0
- SUMP PUMPS	\$0	\$0
INFILTRATION:		
- GREEN STORMWATER	\$8,300,000	\$5,000,000
- PIPE LINING	unknown	unknown
STORAGE & DISINFECTION	\$1,600,000	unknown
WWTF EXPANSION	\$0	\$0
TOTAL	\$21,400,000	\$116,000,000

\*SEPARATION COSTS BASED ON 2014 DEC ESTIMATE.

# COSTLY AND ENDURING PROCESS FOR MUNICIPALITIES



# DIFFICULTIES

**Climate change**

**Steep slopes**

**High ledge**

**Clay soils**

**High  
groundwater:  
infiltration**

**Narrow streets**

**Other  
infrastructure:  
water, bridges,  
gas**

**Roof drains**

**Sump pumps**

**Leaky pipes**

**HazMat sites**

**Easements**



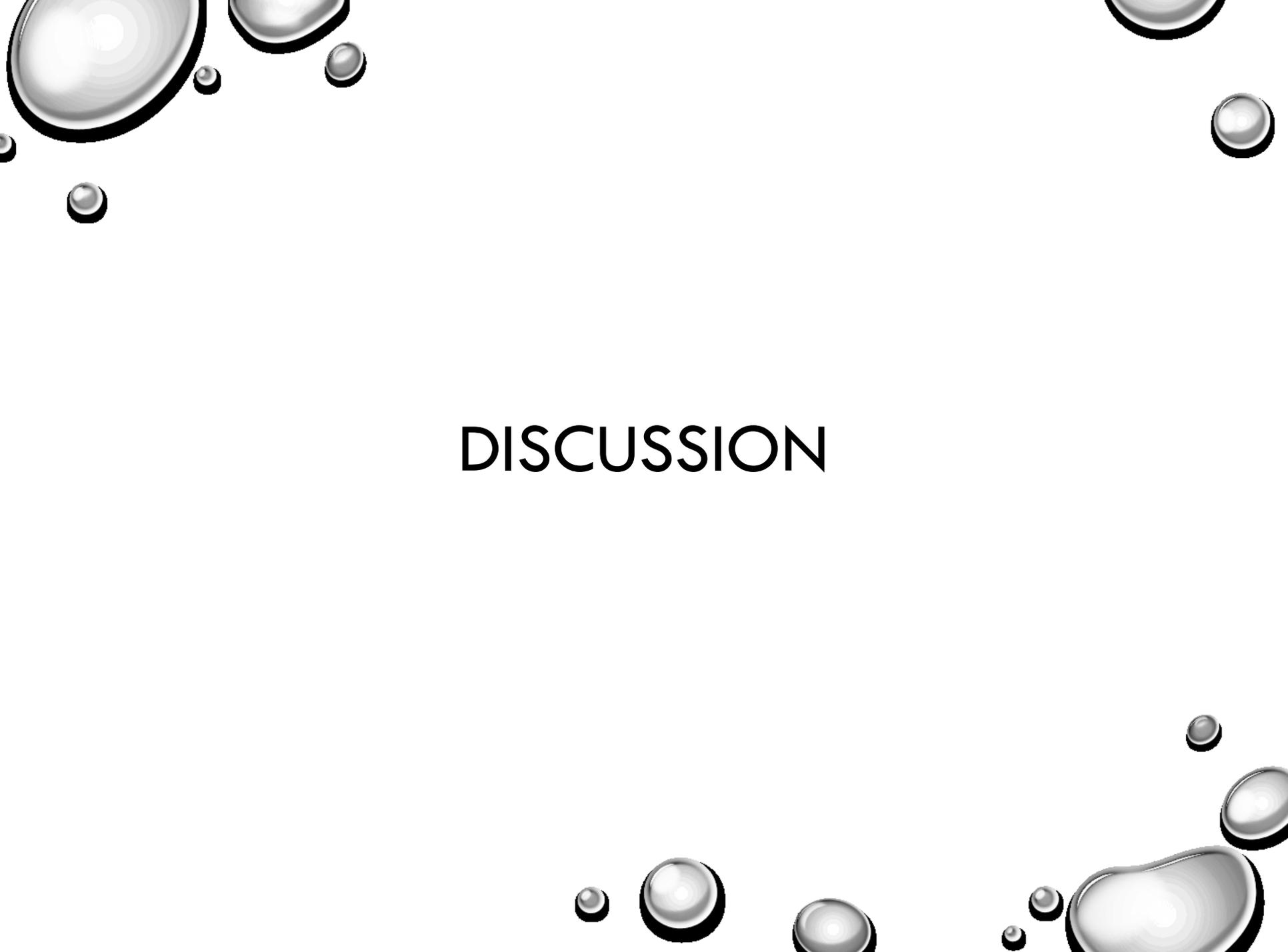


# AFFORDABILITY

- EPA CONSIDERS AN “AFFORDABLE” SEWER RATE FOR A SINGLE FAMILY RESIDENCE TO BE 2% OF MEAN HOUSEHOLD INCOME FOR THE COMMUNITY SERVED.
- 

## Annual User Rates, Median Household Income (MHI), & Affordability for 210 Gallon-Per-Day Single Family Residences

Town	User Rate/Year	MHI	Percent of MHI
Burlington	\$696	\$36,992	1.49%
Enosburg Falls	\$600	\$39,500	1.52%
Fair Haven	\$1002	\$39,904	<b>2.51%</b>
Hartford WRJ	\$599	\$59,365	1.01%
Middlebury	\$636	\$51,186	1.24%
Montpelier	\$925	\$60,347	1.53%
Newport City	\$793	\$32,083	<b>2.47%</b>
Northfield	\$838	\$60,938	1.37%
Rutland City	\$660	\$41,502	1.59%
St Albans City	\$734	\$46,133	1.59%
St Johnsbury	\$656	\$42,944	1.53%
Springfield	\$505	\$41,152	1.23%
Vergennes	\$1,354	\$53,080	<b>2.55%</b>
Woodstock	\$910	\$75,482	1.21%

The image features a white background with several realistic, 3D-rendered bubbles of various sizes. These bubbles are positioned in the corners: a cluster in the top-left, a single one in the top-right, and a group in the bottom-right. The bubbles have highlights and shadows, giving them a metallic or glass-like appearance. In the center of the page, the word "DISCUSSION" is written in a bold, black, sans-serif font.

# DISCUSSION