

# CSO Control Technology and Management in Tokyo



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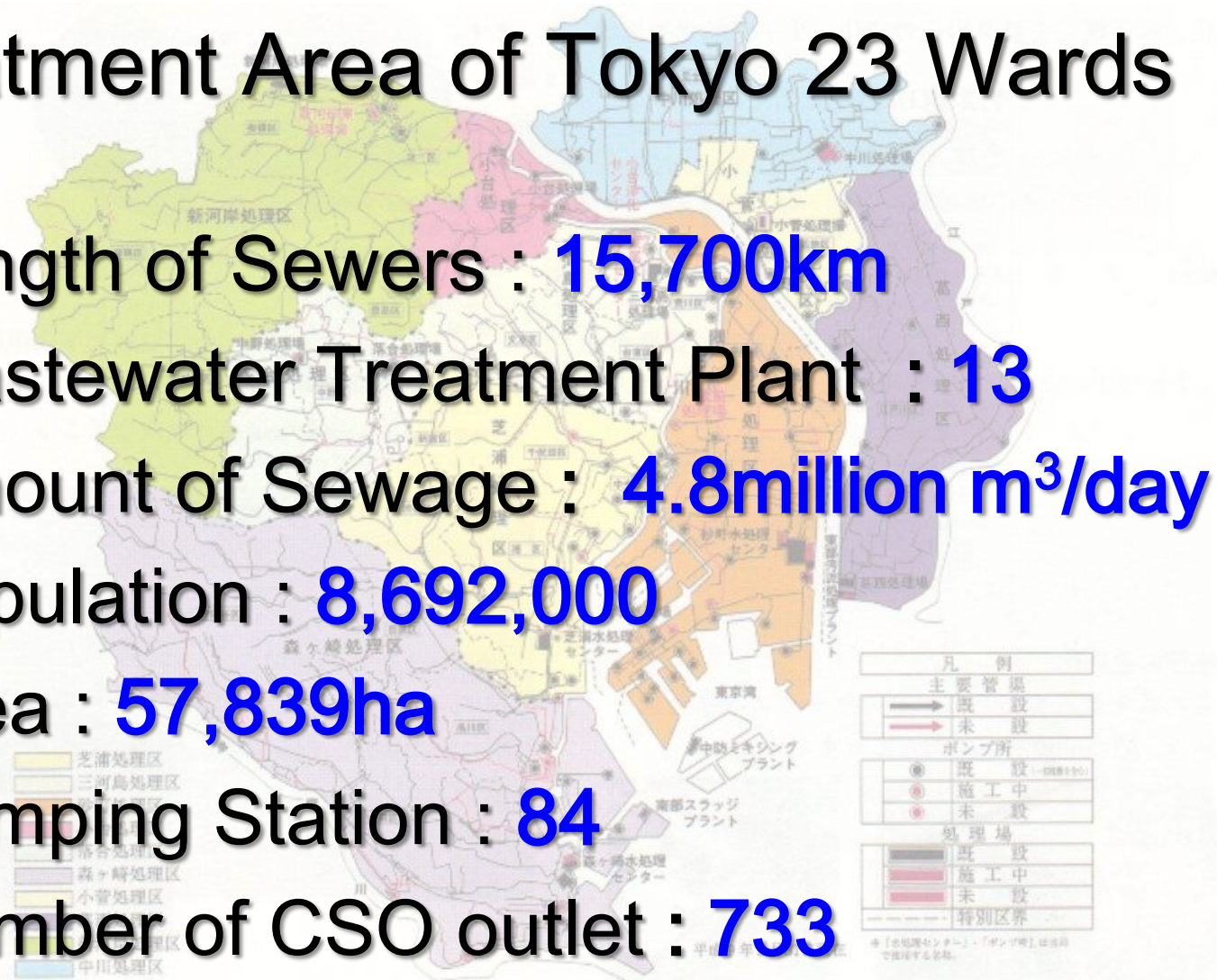
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# Outline of Sewerage in Tokyo

## Treatment Area of Tokyo 23 Wards

- Length of Sewers : **15,700km**
- Wastewater Treatment Plant : **13**
- Amount of Sewage : **4.8million m<sup>3</sup>/day**
- Population : **8,692,000**
- Area : **57,839ha**
- Pumping Station : **84**
- Number of CSO outlet : **733**



# Outline of Sewerage in Tokyo

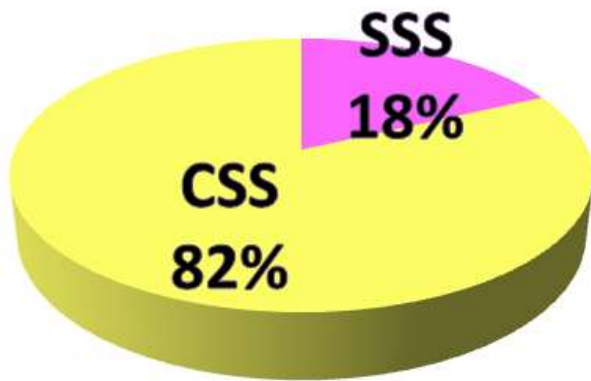
## “Kanda Sewer”

- The first sewer was installed in 1884



# Combined Sewer System in Tokyo

## Sewer System in the Tokyo Ward Area



- Sewer Outlets
- Pumping station



# Combined Sewer System in Tokyo

## Why did we adopt combined system?

- Rapid Expansion of Storm Water Drainage
- Low Cost
- Narrow Space under Public Road

# Combined Sewer System in Tokyo

## Problem caused by CSS

Outlet at dry weather



Combined sewer overflow



# Combined Sewer System in Tokyo

## Problem caused by CSS

(Artificial Beach near Tokyo Port)



During dry weather

After rainfall





# CSO Control Target

## ➤ Long-Term Target

Pollution load as low as separate sewer system

## ➤ Mid-Term Target

Less than 40mg/l of BOD for CSO in average at each treatment area

## ➤ Urgent target

Control the outflow of debris such as oil balls, garbage, etc.

# CSO Control Measures in Tokyo

Transition of the CSO Control Measures Master Plan in Tokyo

## **1972 Beginning of CSO control**

Intercepting Ratio of Sewer : 2Q → 3Q

## **1992 “Master Plan for the Second-Generation Sewerage”**

Storage Tanks to Store First Flush Storm Water

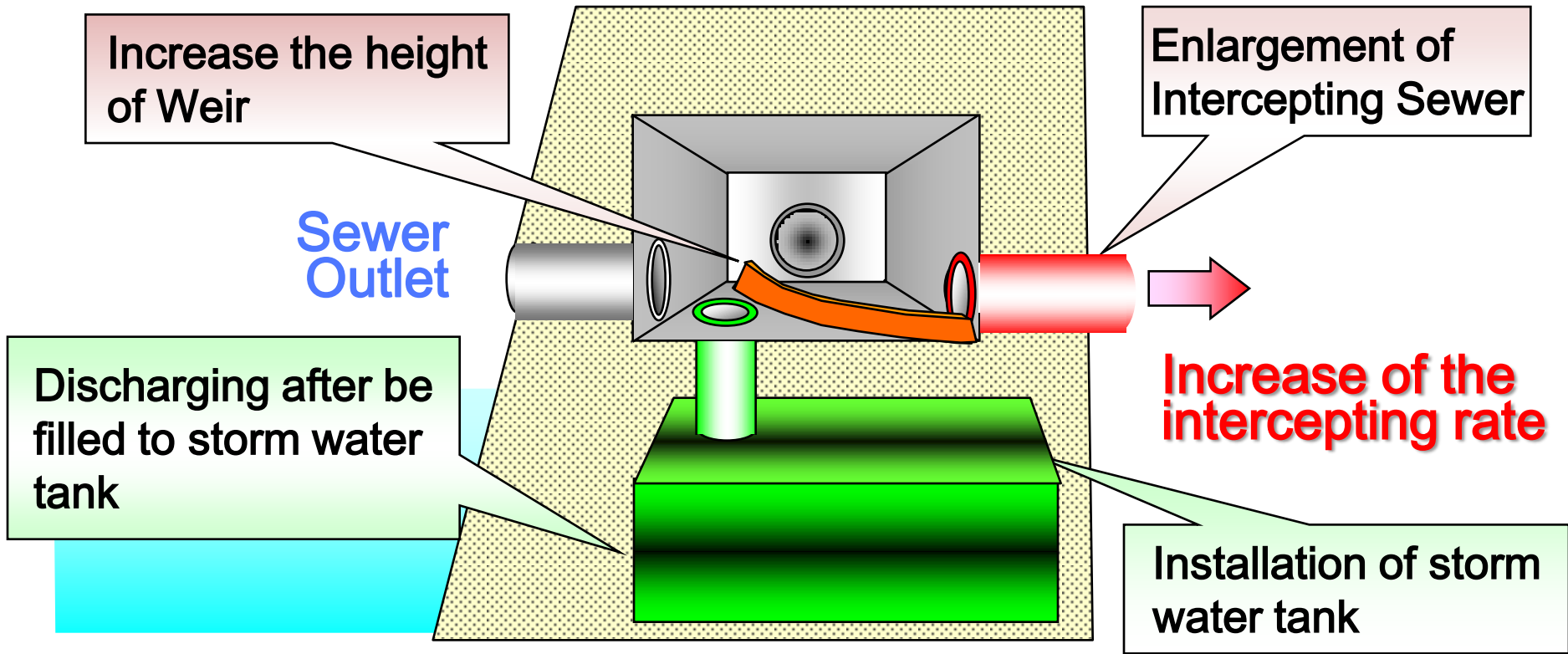
## **2001 “Quick Plan”**

Trapping Debris at Diversion Chamber

## **2010 “Management Plan 2010”**

Improvement of Facilities at 14 Priority Areas

# CSO Control Measures in Tokyo



# CSO Control Measures in Tokyo

## Progress

Index for Evaluation	Unit	FY 2010	Target
Length of Increased Intercepting Sewer	km	<b>154 (99%)</b>	<b>156</b>
Volume of Storm water tank	10 <sup>3</sup> m <sup>3</sup>	<b>960 (26%)</b>	<b>3,600</b>
Number of Outlets Equipped with Debris Trap Device	-	<b>710</b>	<b>733</b>

# CSO Control Measures in Tokyo

## Priority Areas

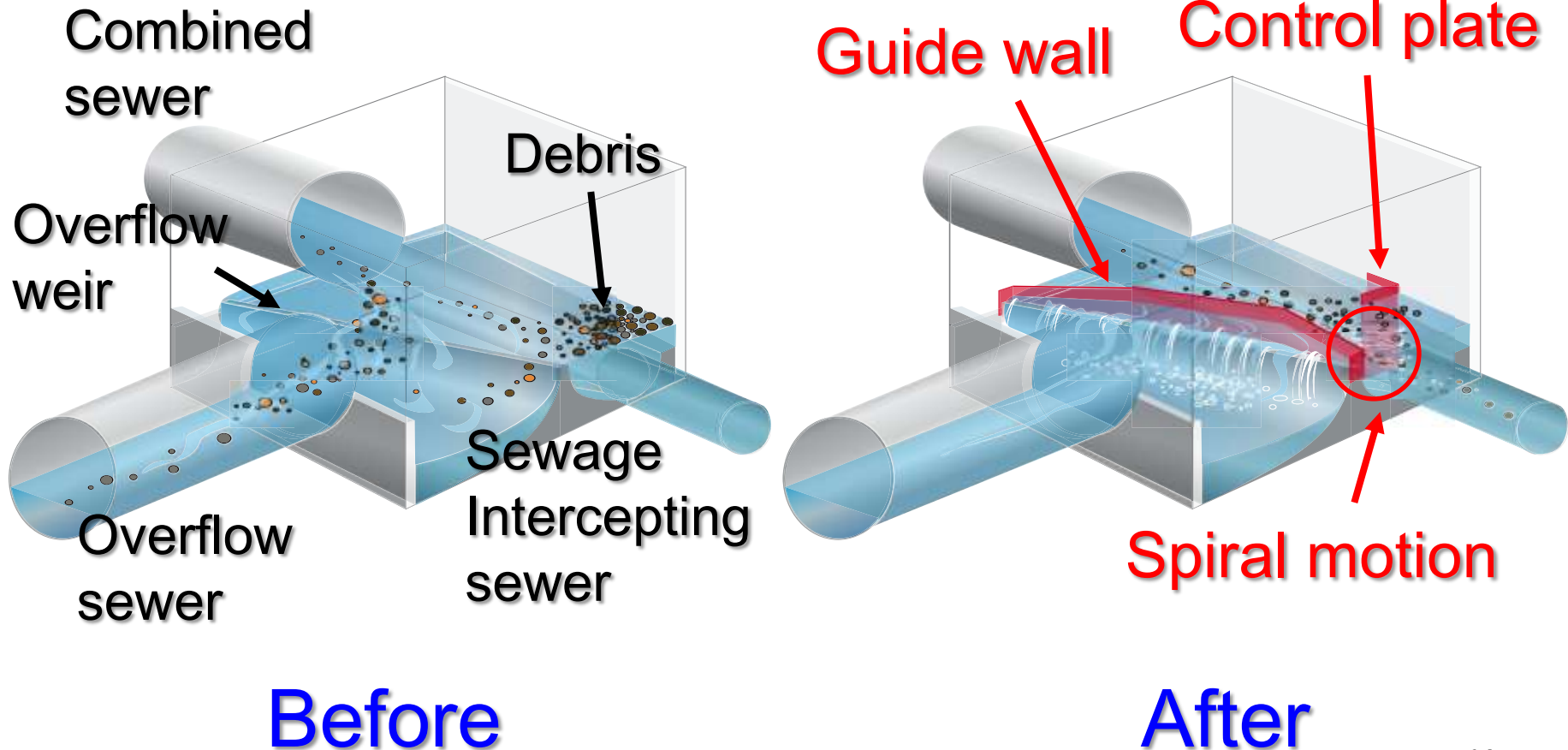


- ✓ Little water flow
- ✓ Tidal river

# CSO Control Measures in Tokyo

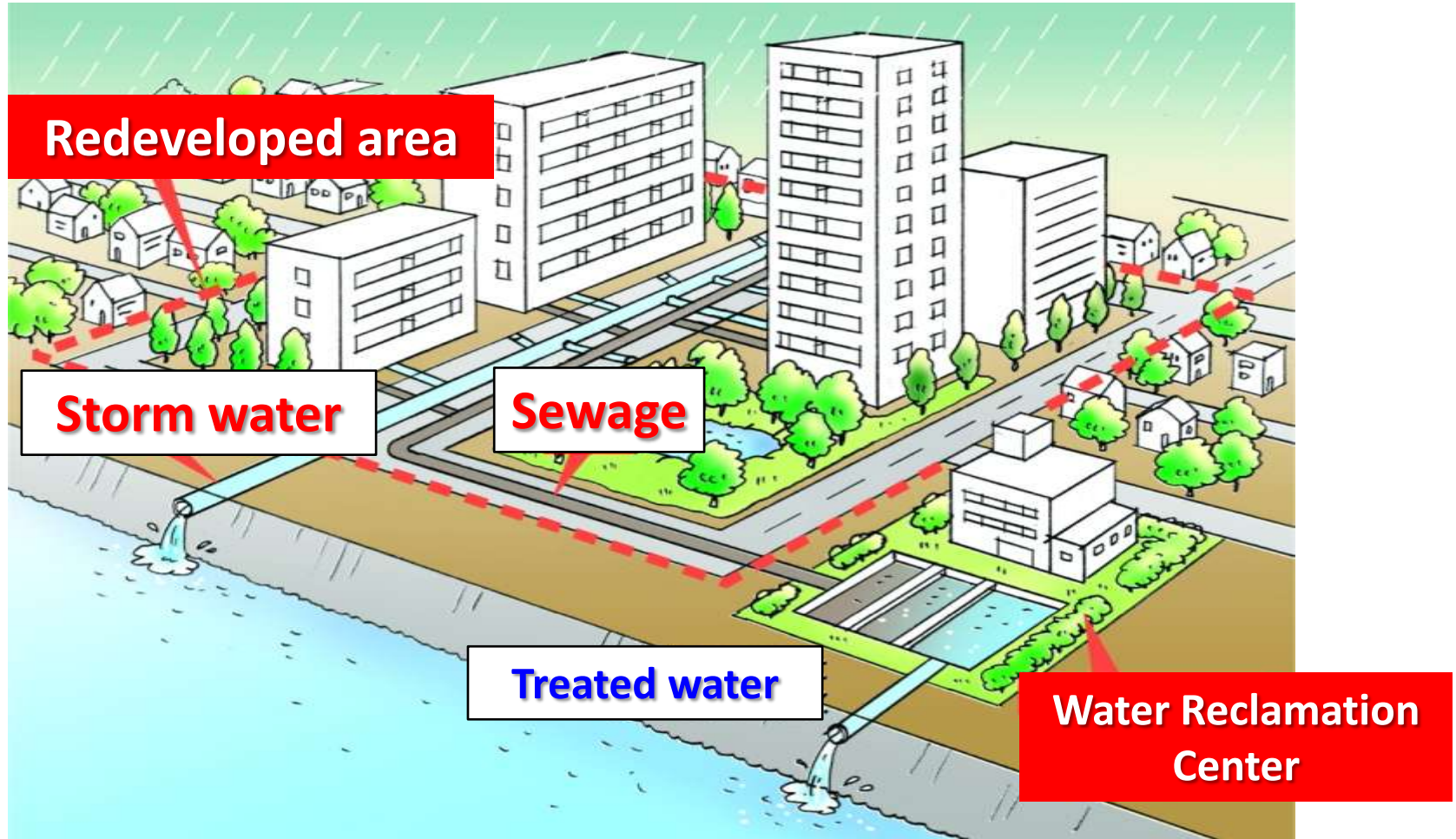
## Water Surface Control Device

-Debris trap devices installed at diversion chamber-



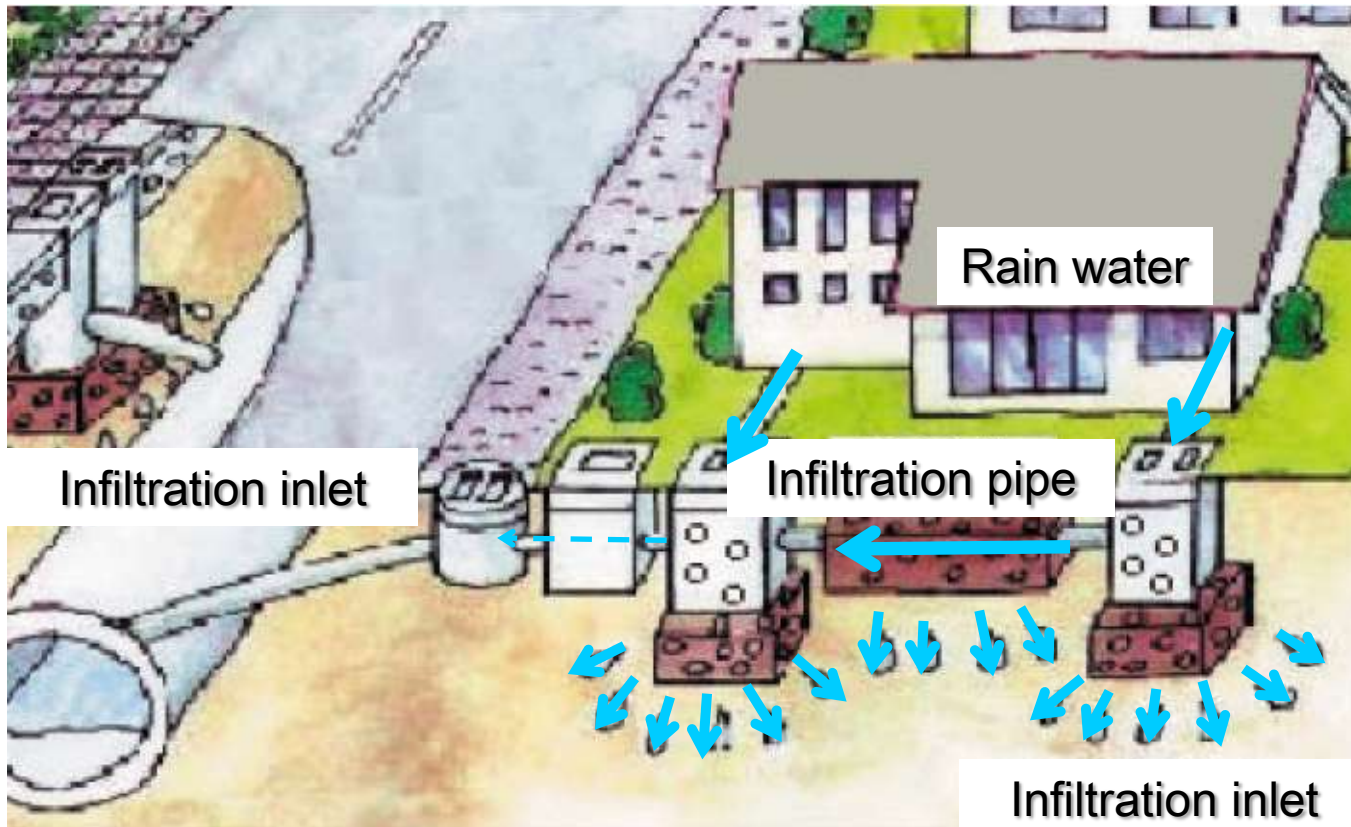
# CSO Control Measures in Tokyo

## Partial Separate Sewer System



# CSO Control Measures in Tokyo

## Rainfall infiltration

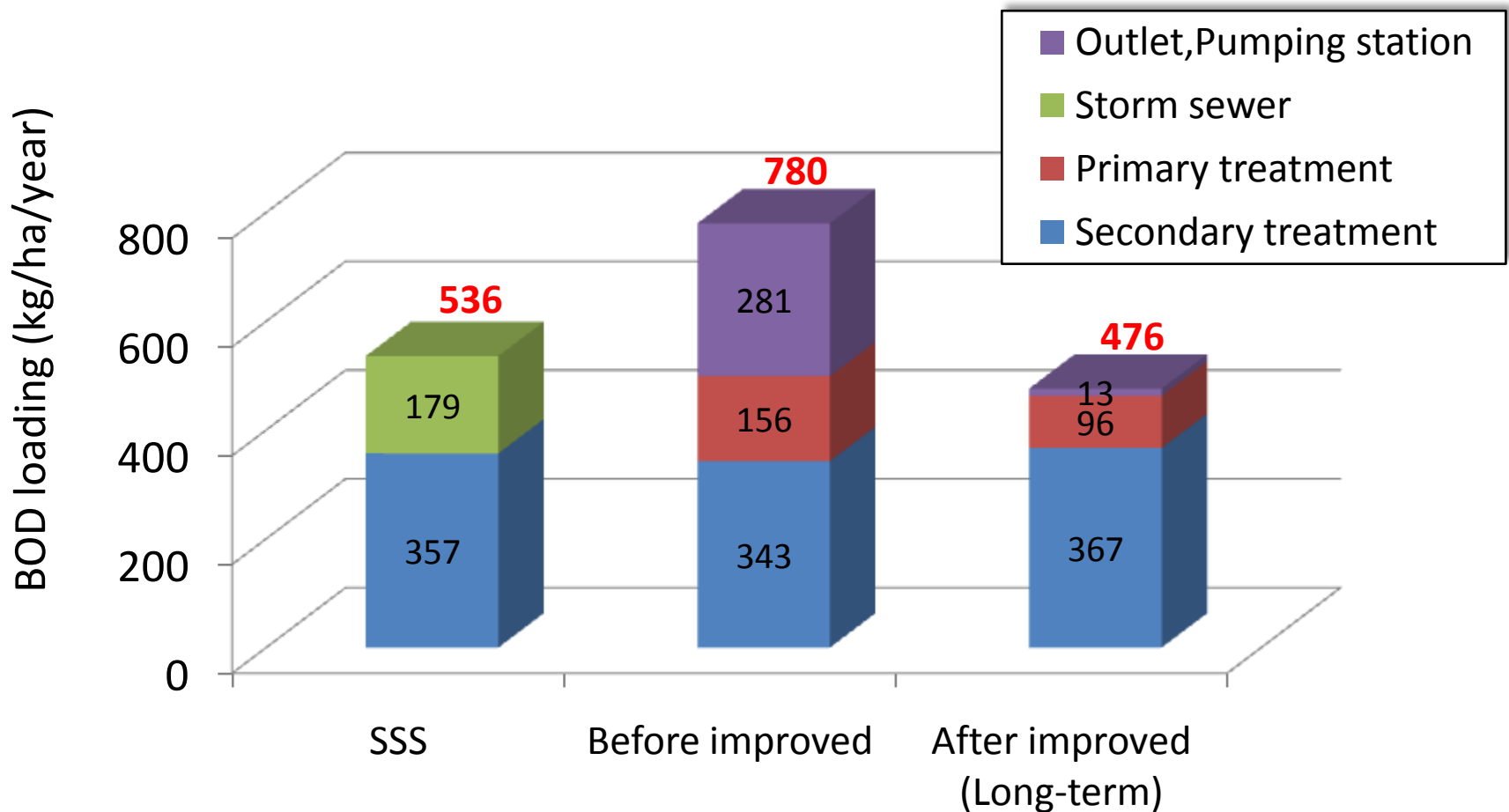


Infiltration inlet



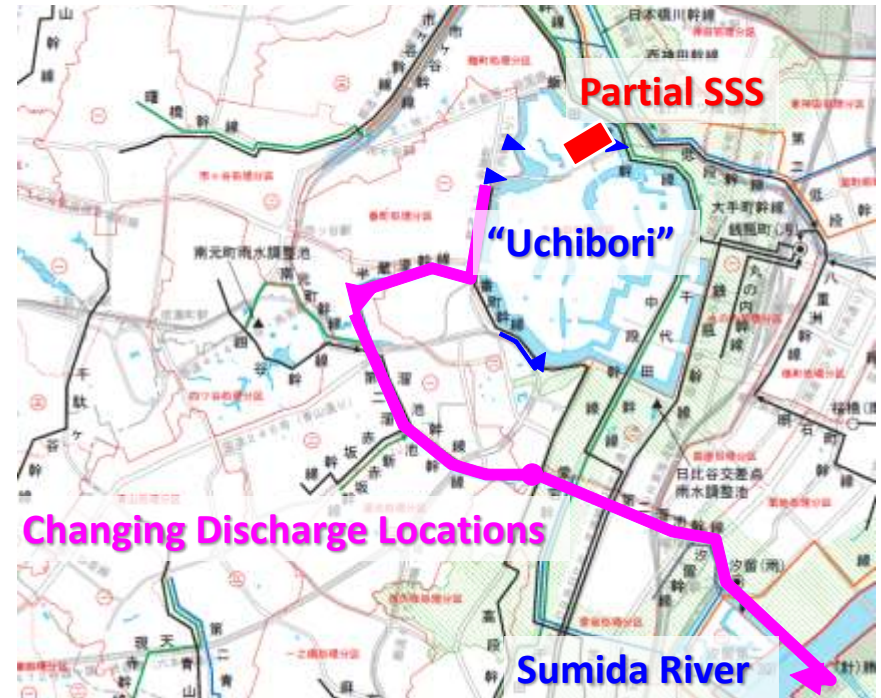
# CSO Control Measures in Tokyo

## Effect of Improvement of Combined Sewer System



# CSO Control Measures in Tokyo

## Purification of “Uchibori” Moat Water



### ➤ Changing Discharge Locations

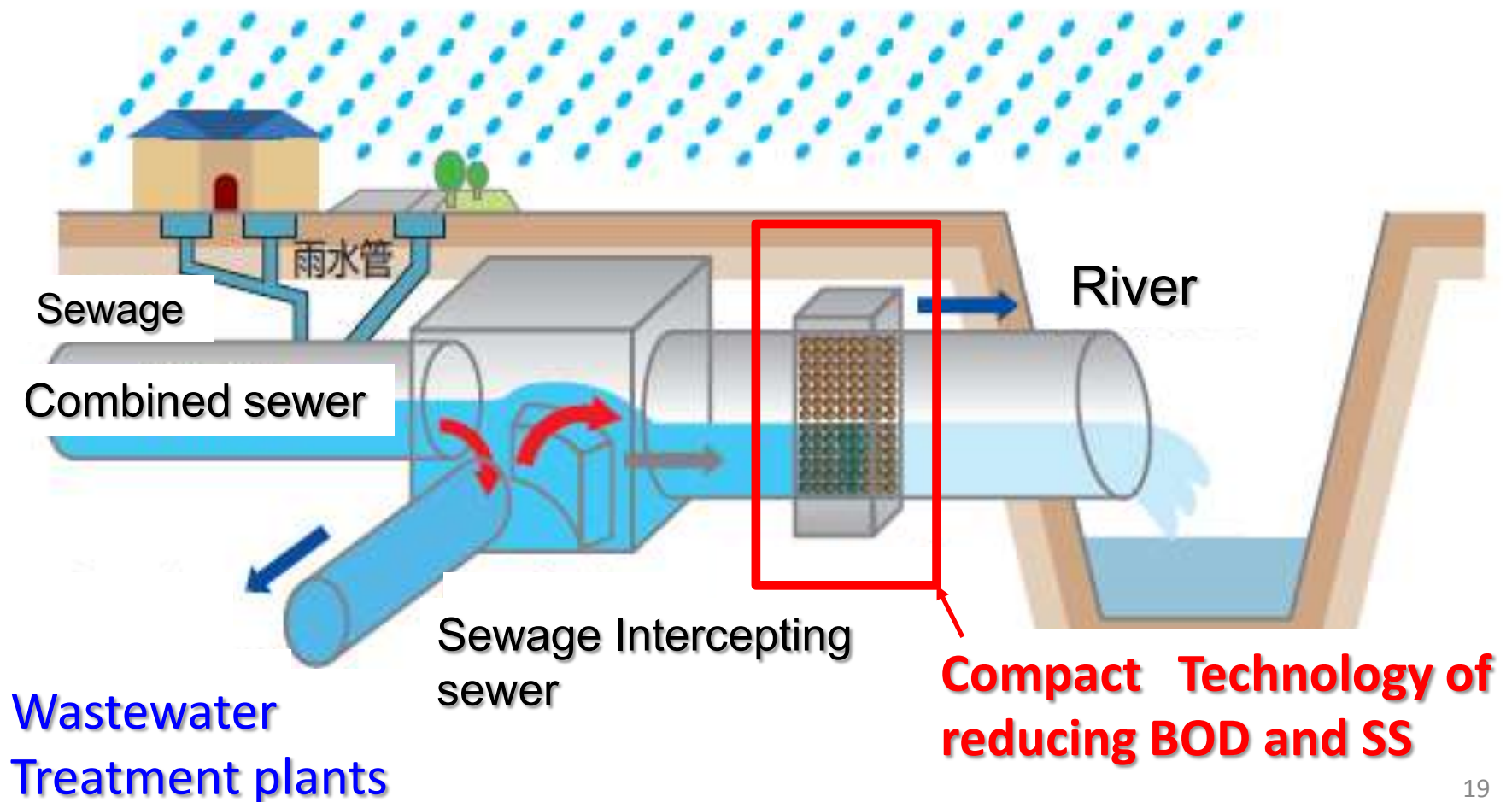
: Chidoriga-Huchi and Sakurada-Hori “Uchibori” to Sumida River

### ➤ Introducing Partial SSS

: Shimizu-Hori

# Measures under Developing

## Compact Technology for Improvement of CSS



**Thank you for your attention**