



5.1

Aerial Photograph of Annacis Island Wastewater Treatment Plant

# Annacis Island Wastewater Treatment Plant Process

Dan Coulman

Chargehand, Annacis Island Wastewater Treatment Plant

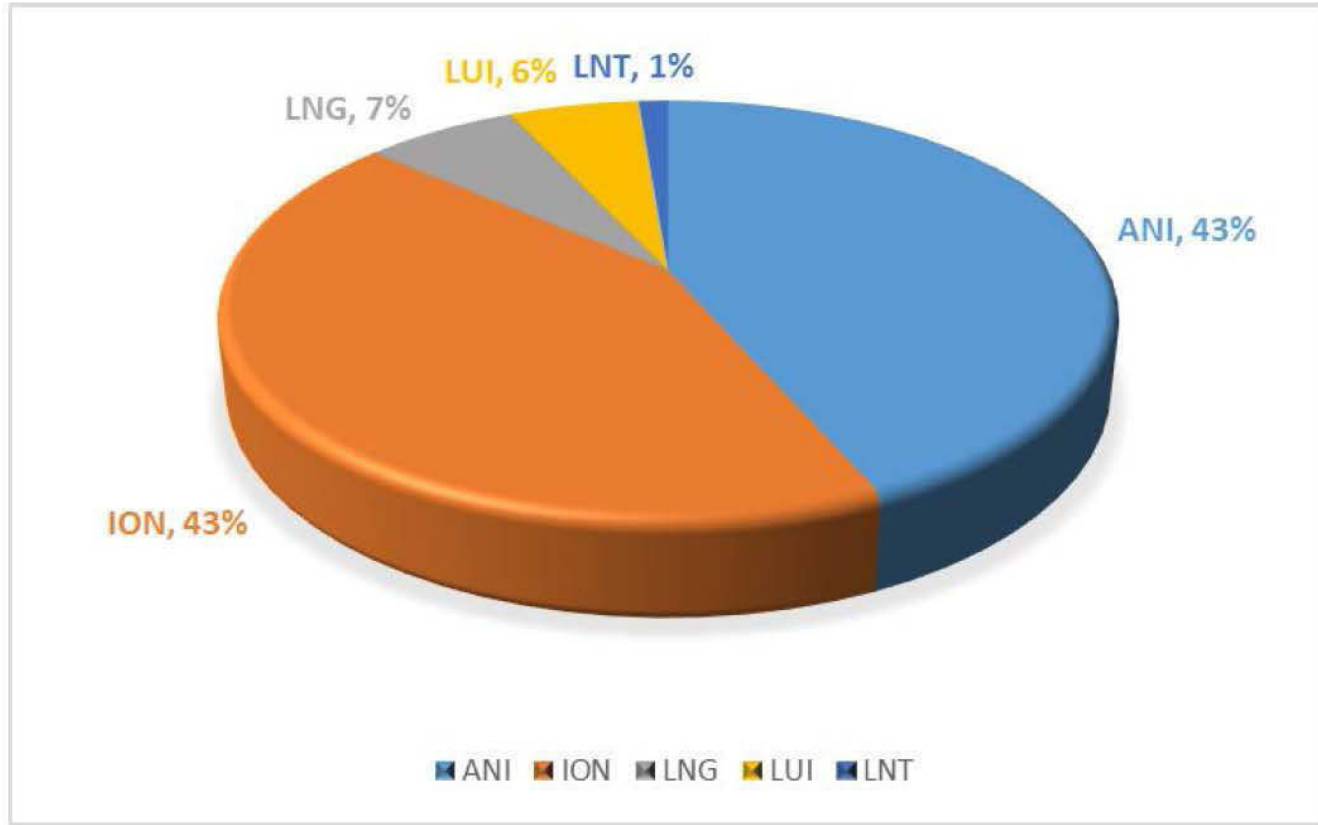
Liquid Waste Committee - June 8, 2022

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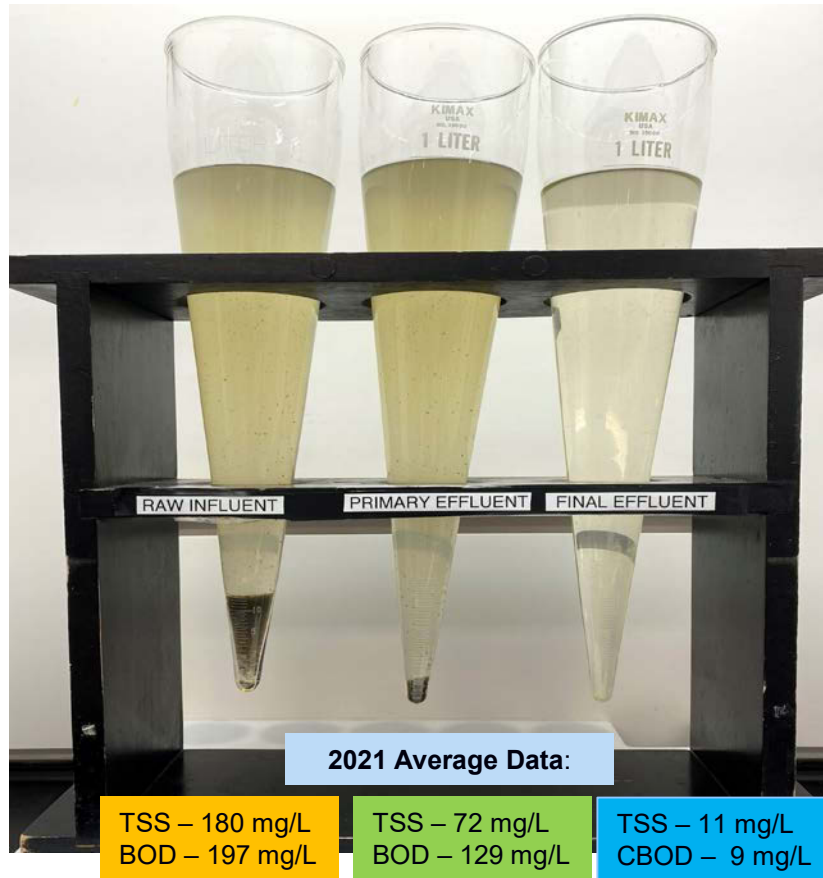
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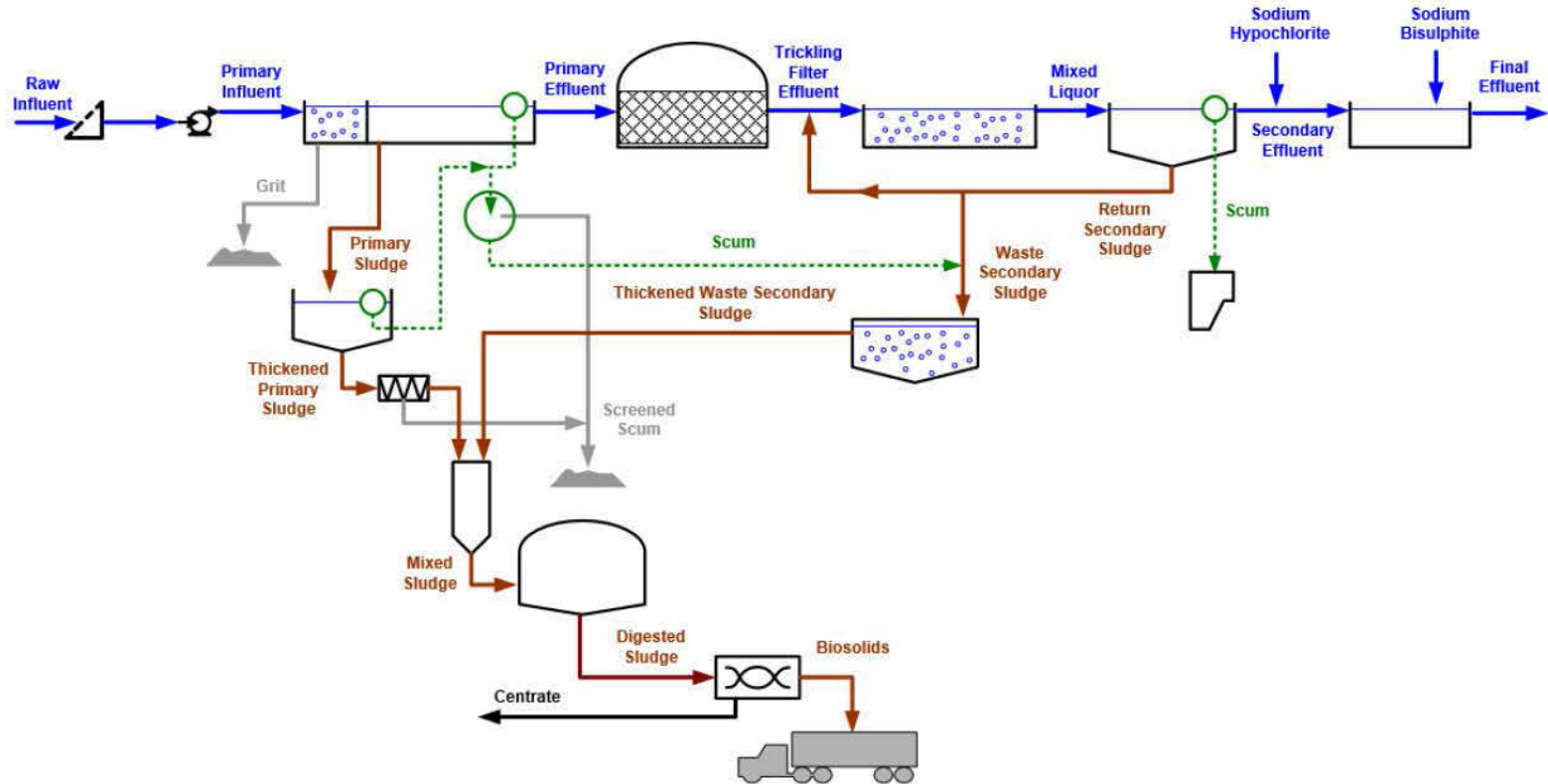
# 2021 ANNUAL WASTEWATER FLOW DISTRIBUTION



# PERFORMANCE



# PROCESS FLOW DIAGRAM





# PRIMARY TREATMENT

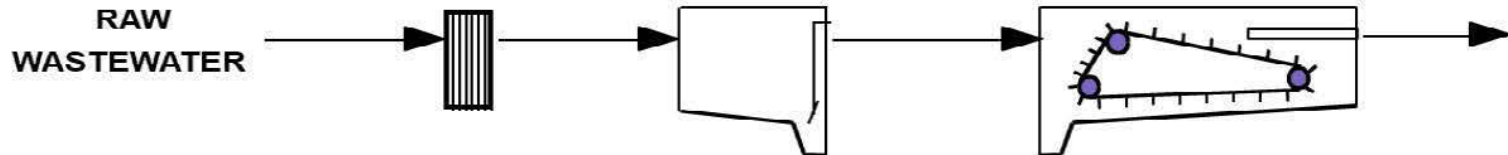


**SCREENING**

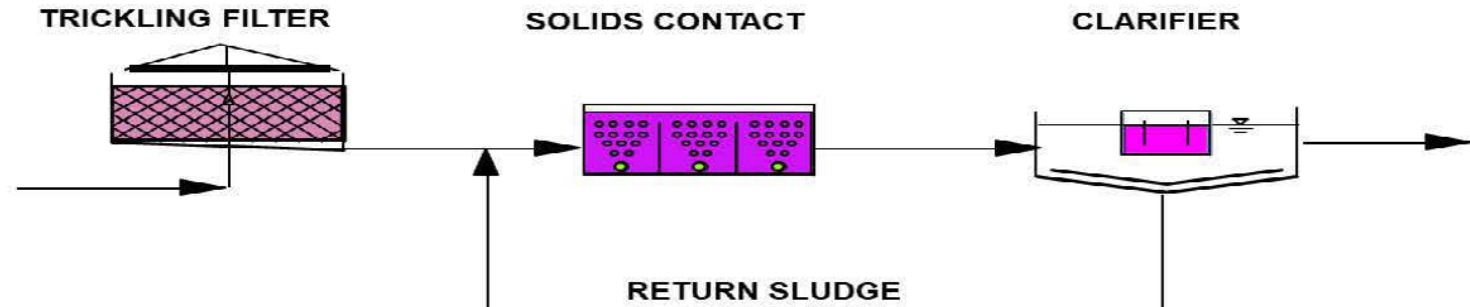


**GRIT  
REMOVAL**

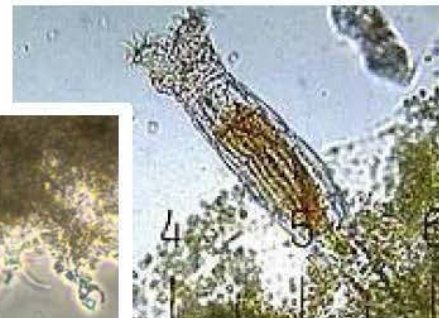
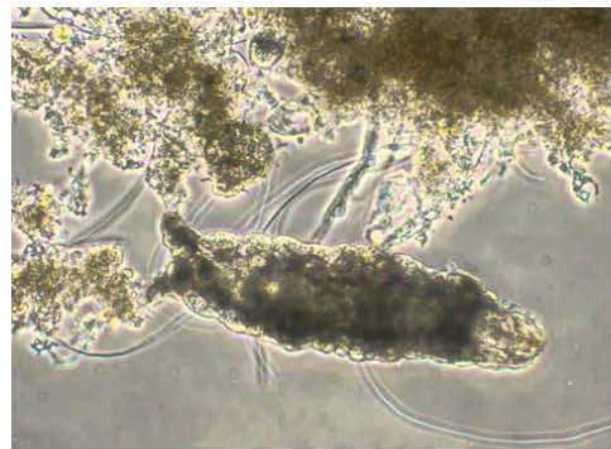
**PRIMARY  
SEDIMENTATION**



# SECONDARY TREATMENT

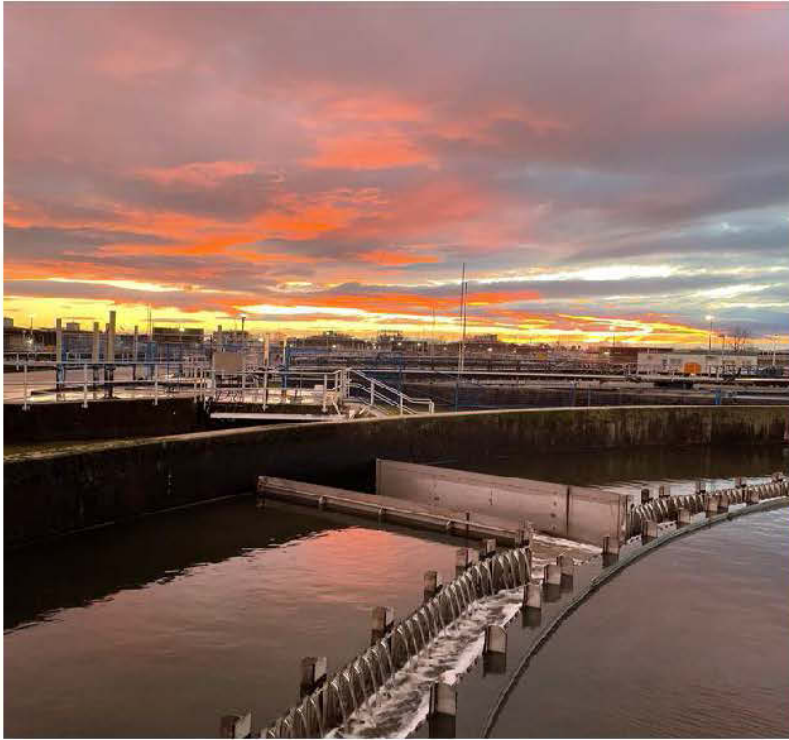


# SOLIDS UNDER AERATION





# SECONDARY CLARIFICATION





# DISINFECTION & DECHLORINATION

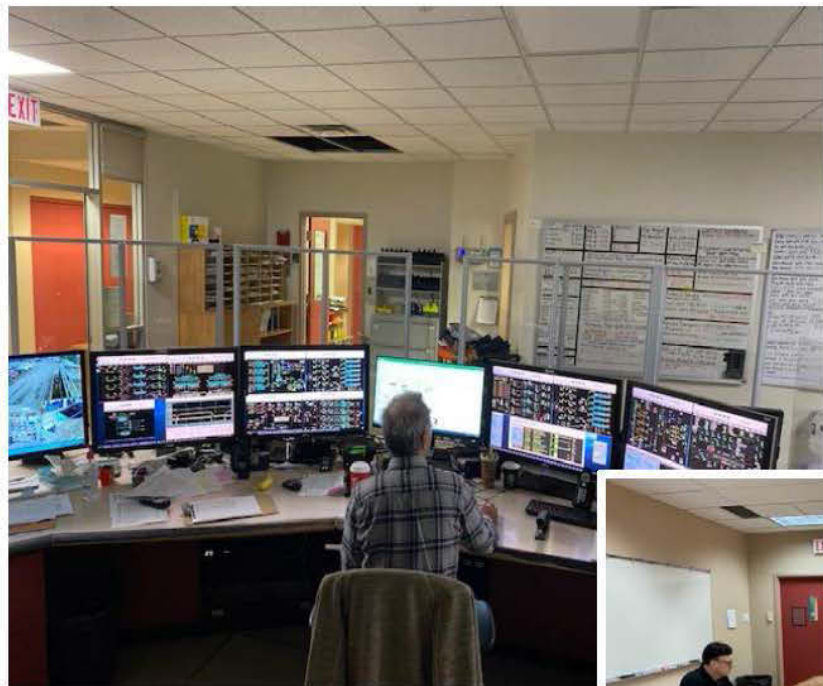


# SOLIDS STREAM TREATMENT





# DAILY OPERATIONS





# WHAT CAN GO WRONG?





# Questions

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An aerial photograph of Vancouver, British Columbia, showing the city's dense urban core, the harbor, and the surrounding mountains. The city is built on a peninsula, with the harbor to the west and the mountains to the east. The water is a deep blue, and the city is a mix of green and grey. The mountains in the background are covered in green forest.

# 2021 GVS&DD Environmental Management and Quality Control

## ANNUAL REPORT

Andjela Knezevic-Stevanovic

Director, Environmental Management and Quality Control, Liquid Waste Services

Liquid Waste Committee – June 8, 2022

52743134

**metro**vancouver

Liquid Waste Committee



# ENVIRONMENTAL MANAGEMENT & QUALITY CONTROL

## Annual Report

In brief:

- Wastewater treatment plants (WWTPs) met performance expectations
- Applicable water quality objectives and guidelines for the receiving water bodies were mostly met
- Biosolids quality met regulatory requirements
- Health Authorities posted swimming advisories at 3 beaches

# METRO VANCOUVER'S WWTP



3 Secondary –  
freshwater discharge

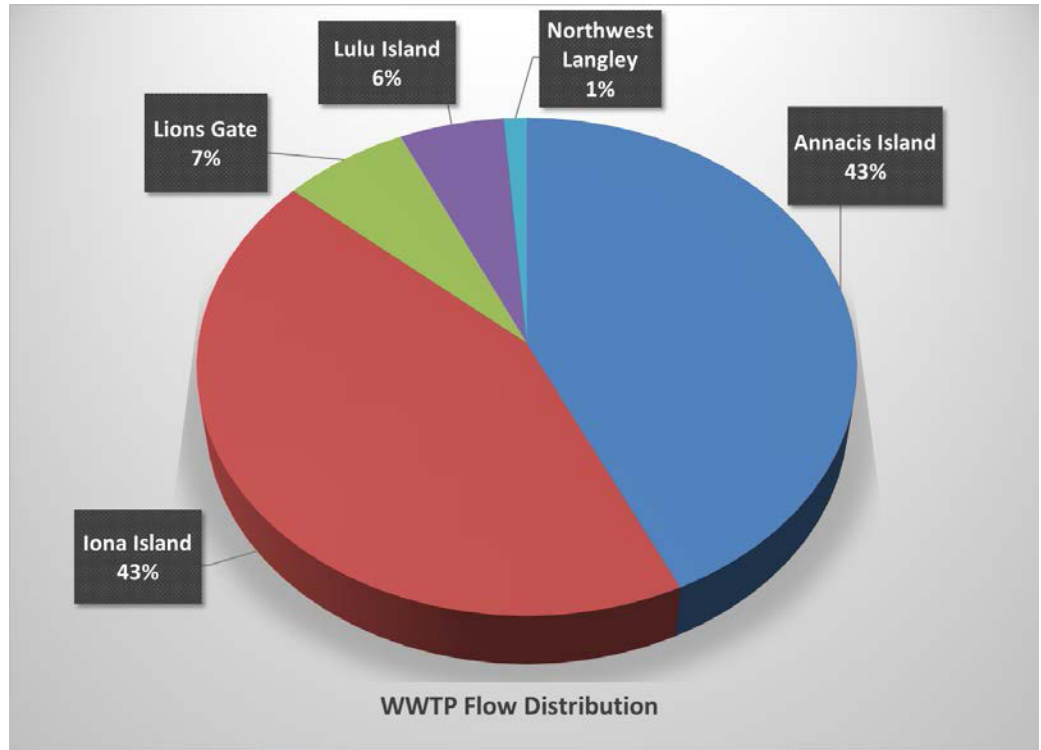


2 Primary –  
marine discharge



# METRO VANCOUVER'S WWTPs

- About 451 billion litres of wastewater treated in 2021





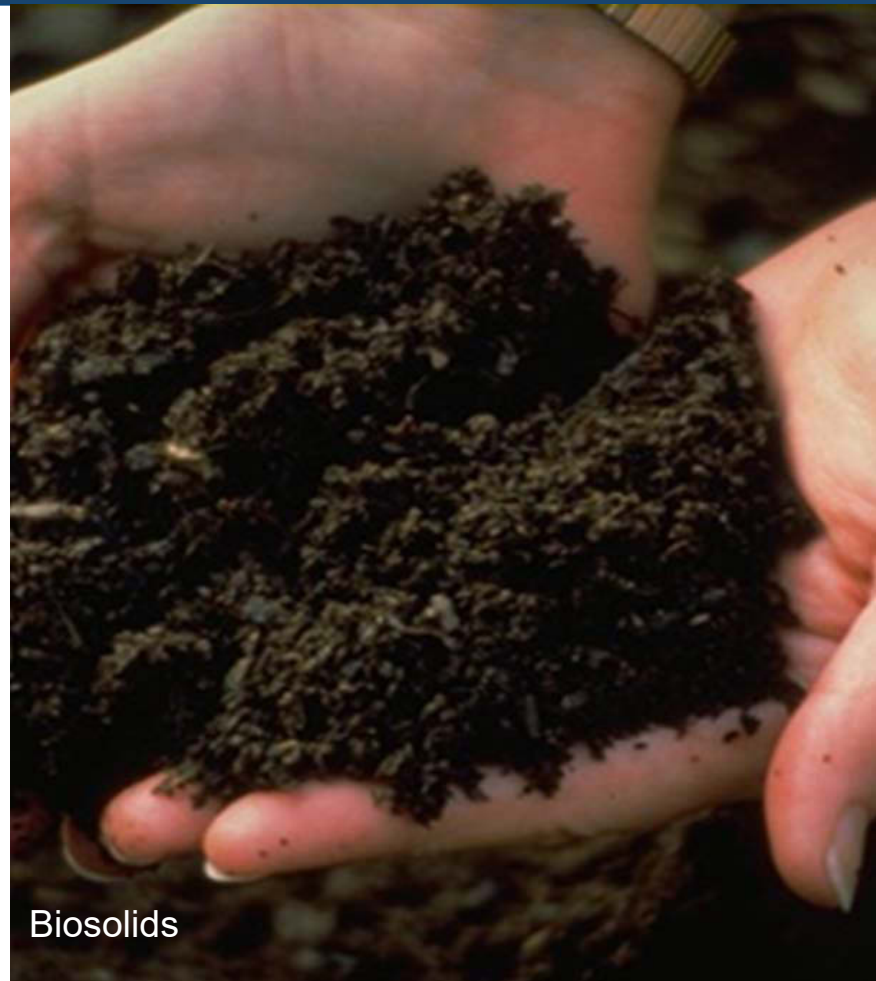
# WWTP REGULATORY AND TECHNICAL PERFORMANCE

- Over 210,000 analyses by Metro Vancouver laboratories alone
- Over 57,000 tonnes of suspended solids (TSS) and over 55,000 tonnes of biochemical oxygen demand (BOD) removed
- Treatment efficiency met or exceeded expectations
- Operational Certificate requirements met

WWTP	% TSS Reduction	% BOD Reduction
Iona Island	62	46
Lions Gate	73	47
Annacis Island	93	95
Lulu Island	98	98
Northwest Langley	93	95

## BIOSOLIDS QUALITY MONITORING

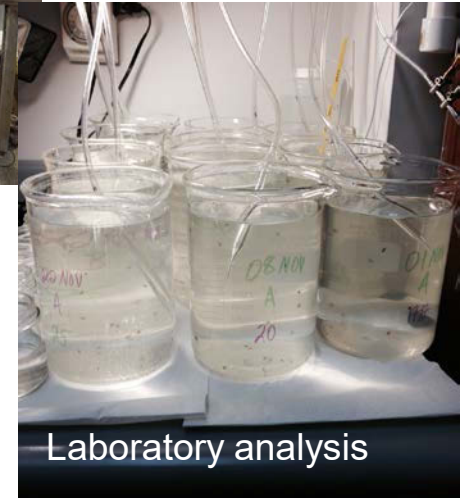
- Almost 15,000 laboratory analyses performed to determine biosolids quality
- Metal concentrations and fecal coliform counts in biosolids generally well below regulatory limits
- Produced over 64,000 bulk tonnes of biosolids and beneficially used 100%
- 20-year average beneficial use of biosolids is over 97%



Biosolids

# EFFLUENT TOXICITY MONITORING

- Effluent from secondary WWTPs generally passed acute toxicity tests
- Toxicity generally related to ammonia, surfactants, and reduced oxygen
- North shore public campaign to reduce detergent use expected to address surfactant induced toxicity





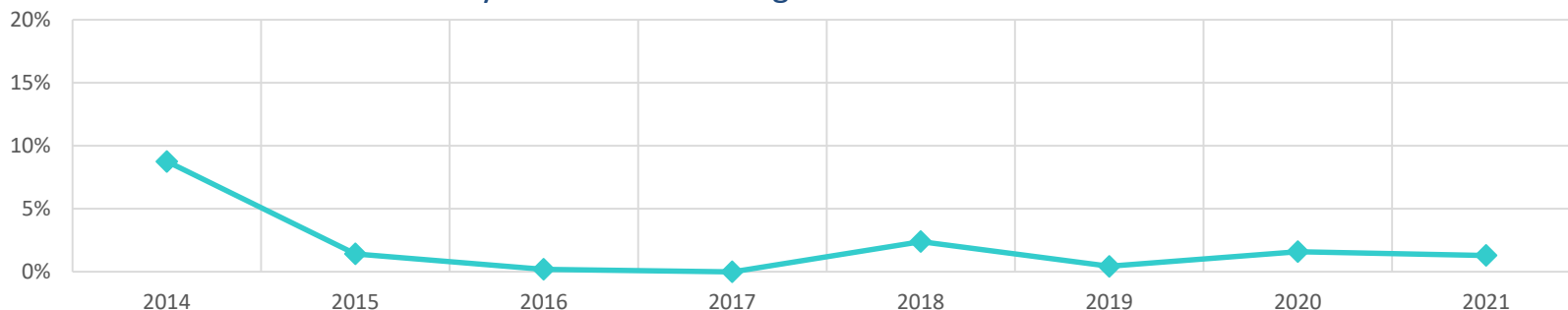
# MONITORING OF RECEIVING WATER BODIES

- Strait of Georgia
- Burrard Inlet
- Fraser River



# BEACH MONITORING

C-05 Recreational Water Quality - Tests not Meeting Criteria



- Bacteriological water quality monitored at 41 beaches
- Most bathing beaches met the primary-contact recreation guideline except at 3 locations
- Swimming advisories were posted by the Health Authorities for a total of 26 days

# CONCLUSIONS

- Metro Vancouver WWTPs meet performance expectations and operate in accordance with Operational Certificate requirements
- Treatment plants consistently provide an ongoing benefit to the region by reducing contaminant loading to the environment
- Regional liquid waste discharges are effectively managed in a manner that is protective of human and aquatic life





Laboratory analysis

Thank you

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