LWMP Programs & Current Operations Overview

Committee Orientation

January 16, 2019

Presentation Overview

- Liquid Waste Management Plan & Programs
- Provincial & Federal Regulatory Requirements
- Overview of Core Area Conveyance & Disposal System
  - Municipal Inputs & Trunk Flows
  - Current Conveyance System Funding

Liquid Waste Management Planning

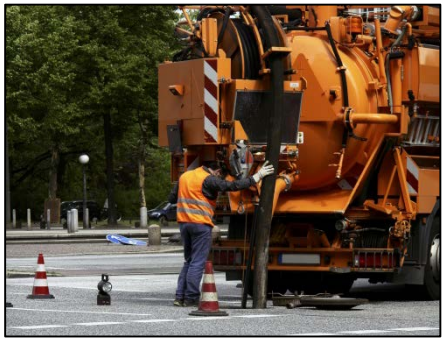
- Core Area Liquid Waste Management Plan – Established July 2000
  - Sets out liquid waste management strategy and CRD and municipal commitments for 25 years
  - Most recent Plan Amendment No. 12 – Conditional Approval June, 2018
- Saanich Peninsula Liquid Waste Management Plan – Established 1996
- Electoral Areas – Five CRD Wastewater Treatment Plants operated under *Municipal Sewage Regulation*
- District of Sooke – Manages stand alone Liquid Waste Management Plan

Core Area Liquid Waste Management Plan Programs

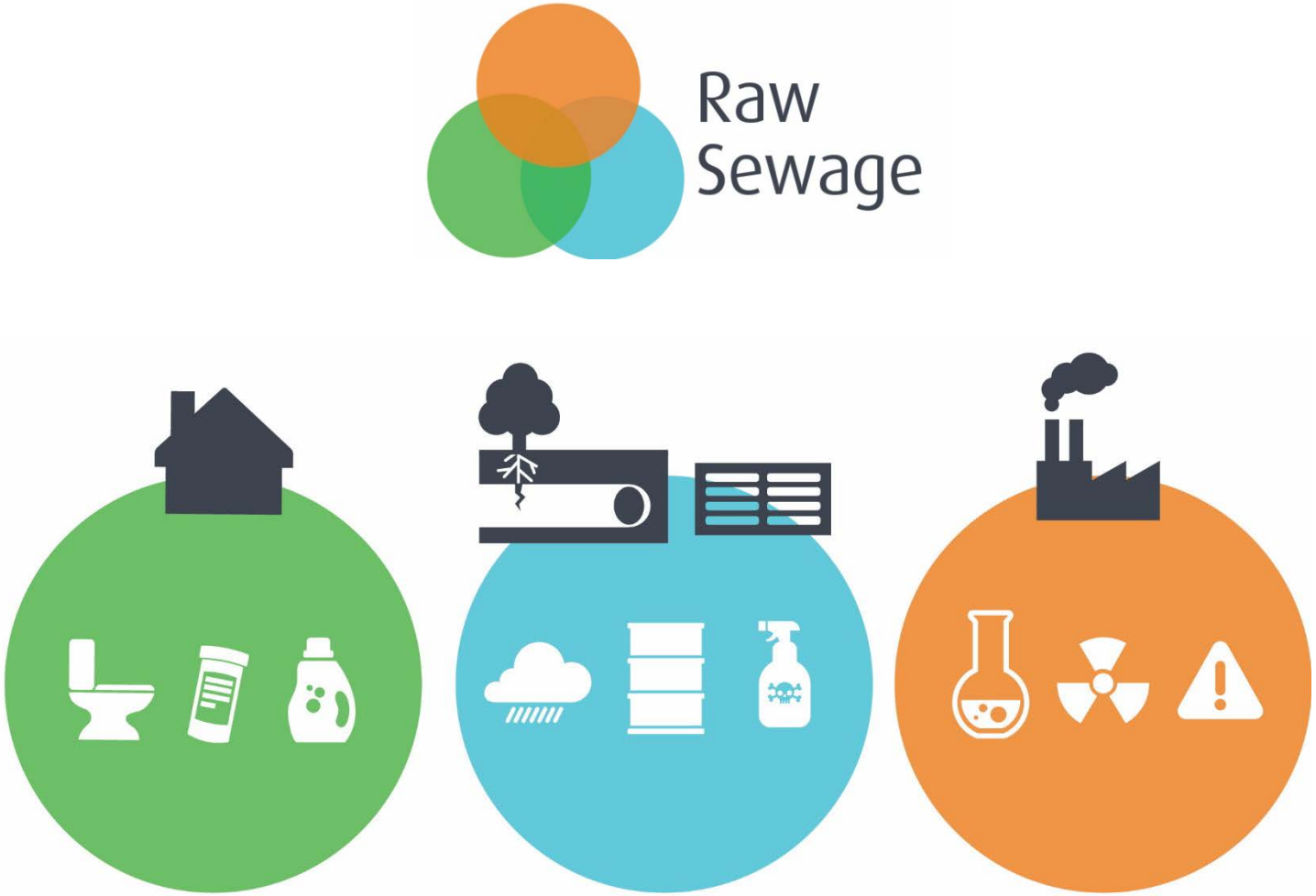
- Inflow & Infiltration Program
- Wastewater & Marine Environment Program
- Regional Source Control Program

Core Area Liquid Waste Management Plan Programs

- Trucked Liquid Waste Management
- Onsite Systems Program
- Stormwater Quality Management
- Harbours Environmental Action Program



What is wastewater?



Liquid Waste Management Programs

Source Control

Industry Sectors
CODES OF PRACTICE & INSPECTIONS:

- Food Services
- Dry Cleaning
- Dentists
- Photographic Imaging
- Automotive repair
- Vehicle Wash
- Carpet Cleaning
- Fermentation
- Printing
- Laboratories
- Recreation Facilities

1200+ inspections per year

Industry Contaminants
BEST PRACTICES & ENFORCEMENT:

96% compliance rate

- arsenic
- chromium
- copper
- lead
- mercury
- nickel (Ni)
- silver (Ag)
- zinc (Zn)

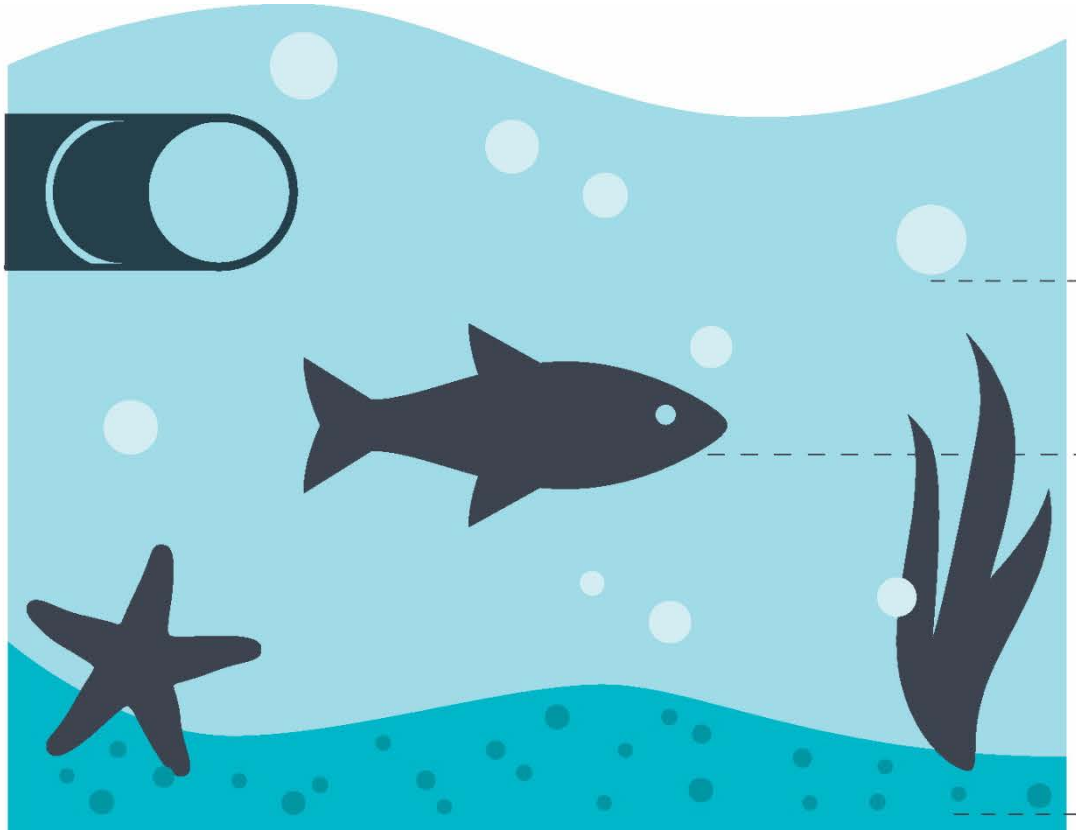
and many more...

Household Contaminants
EDUCATION & OUTREACH:

33% increase in Medication Returns

- Surfactants
- Fats
- Oils
- Grease
- Pharmaceuticals
- Hazardous Wastes

Threats to the Environment



Water Quality Guidelines

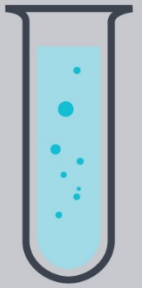
Bioaccumulation

Sediment Quality Guidelines

Measuring effluent quality

→ Liquids = Effluent

Effluent Evaluation



TSS (Total Suspended Solids) ☐

Any organic or inorganic solids suspended in water that are not considered dissolved (measuring < 2microns).

BOD (Biochemical Oxygen Demand) ☐

The amount of oxygen required to decompose organic matter (sewage) in a sample of water.

Regulatory Requirements

Provincial Compliance

EFFLUENT QUALITY	TODAY	2021
TSS (Total Suspended Solids) ≤45 mg/L	☒	☑ +
BOD (Biochemical Oxygen Demand) ≤45 mg/L	☒	☑ +
RECEIVING ENVIRONMENT: IMPACTS OF EFFLUENT		
Edge of Initial Dilution Zone = Water Quality Guidelines	☒	☒
Outside Dilution Zone = Sediment Quality Guidelines	☒	☑
SYSTEM DESIGN		
Capacity: 2x Average Dry Weather (ADW) Flow requires Secondary Treatment *(3x at Macaulay)*	☒	☑
Capacity: 2x-4x ADW Flow requires Primary Treatment	☒	☑
Capacity: >4x ADW Flow requires Preliminary Treatment *(>3x at Macaulay)*	☒	☑

Regulatory Requirements

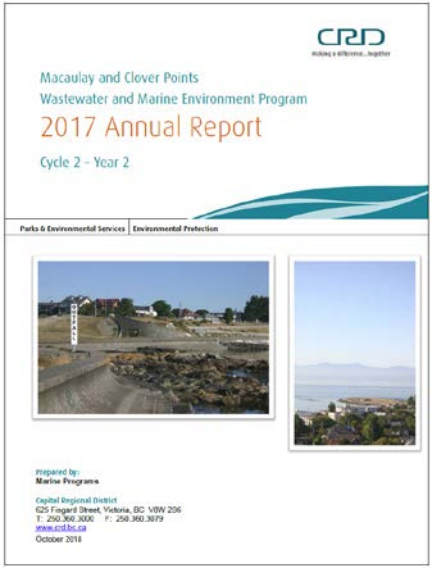
Federal Compliance

EFFLUENT QUALITY	TODAY	2021
TSS (Total Suspended Solids) ≤25 mg/L	☒	☑ +
BOD (Biochemical Oxygen Demand) ≤25 mg/L	☒	☑ +
Un-ionized Amonia concentrations <1.25 mg/L	☑	☑
Acute Toxicity to Fish Results >100%	☒	☑

Liquid Waste Annual Reports

- Core Area Liquid Waste Management Plan
  2017 Annual Programs Report

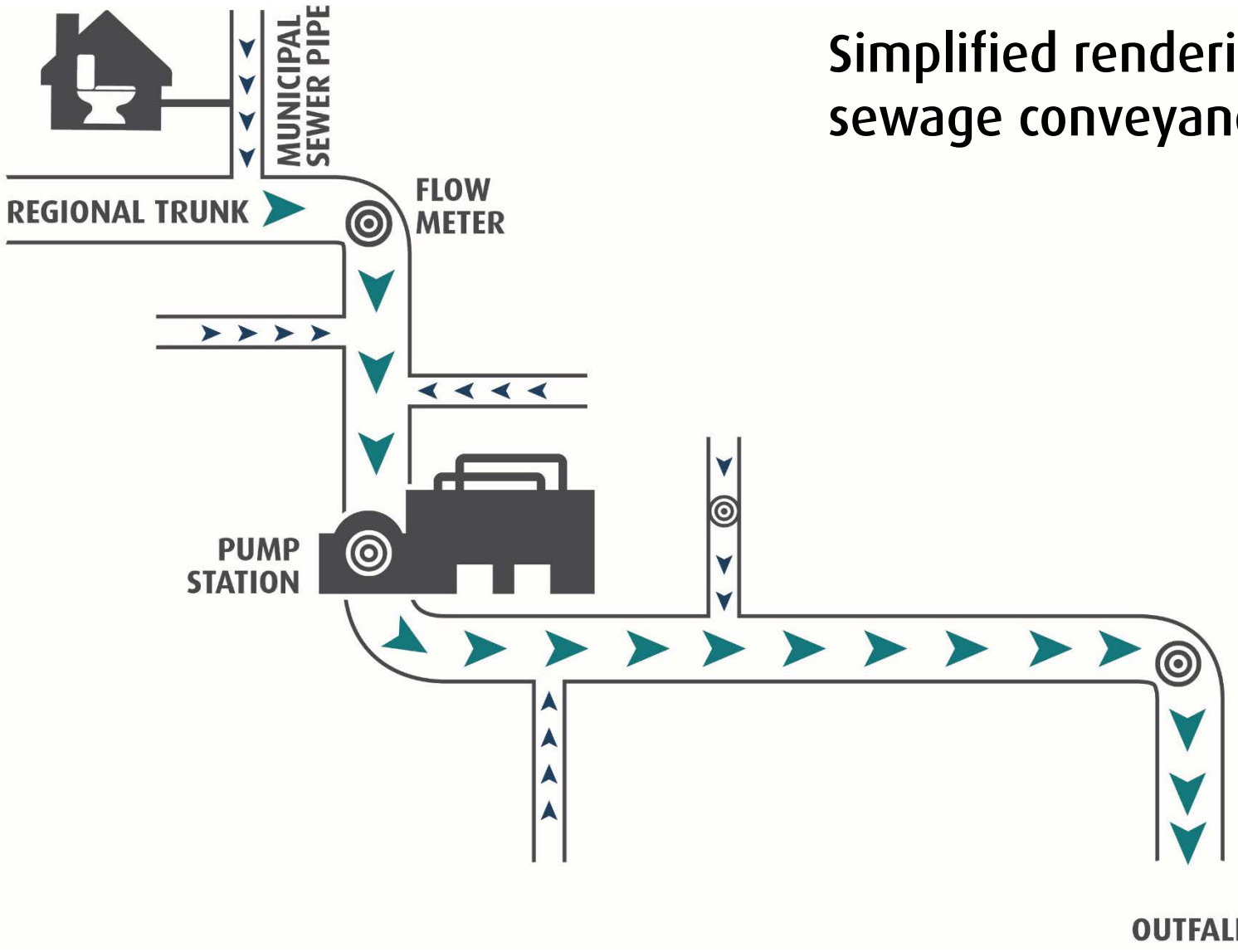
- Macaulay and Clover Points Wastewater and Marine Environment Program 2017 Annual Report



Operations & Engineering

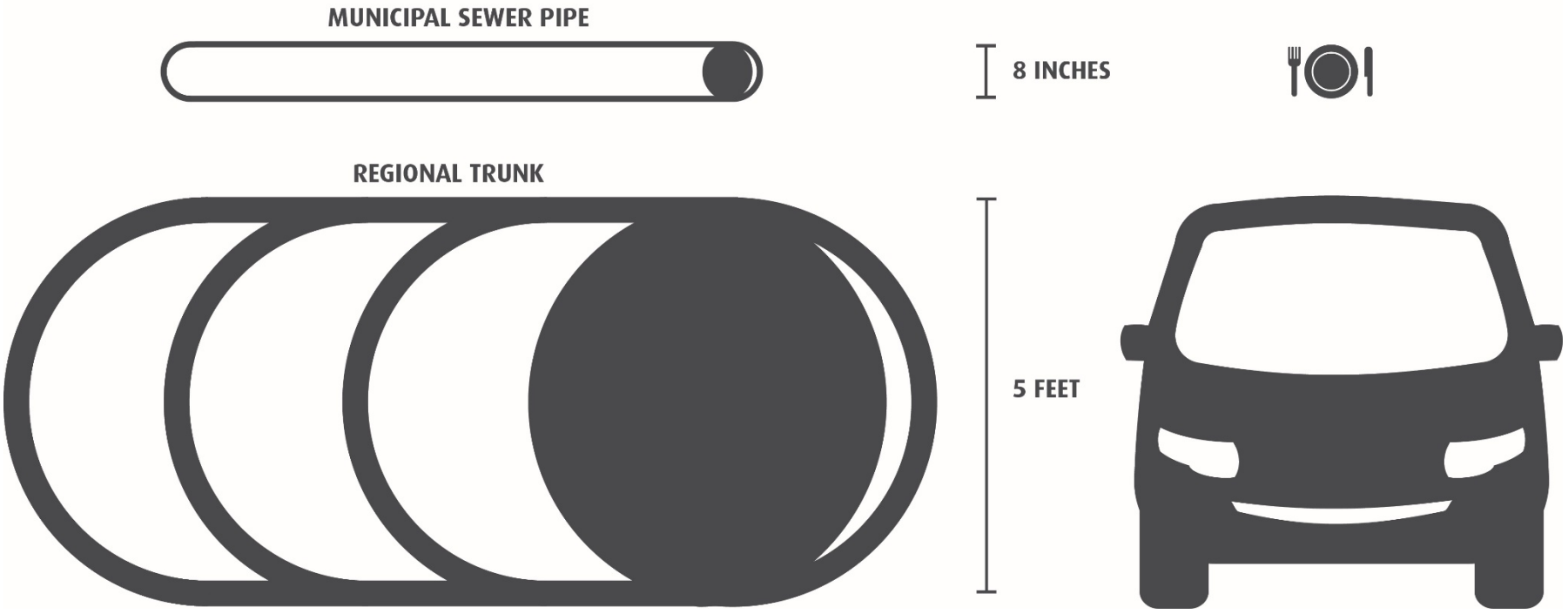
- Operation, maintenance, engineering and capital project delivery for the Core Area wastewater system
- Conveyance system is comprised of four trunks that make up the western and eastern systems:
  - Eastern System: East Coast Interceptor, Northeast Trunk – Clover, Northeast Trunk – Bowker
  - Western System: Northwest Trunk

Conveyance System

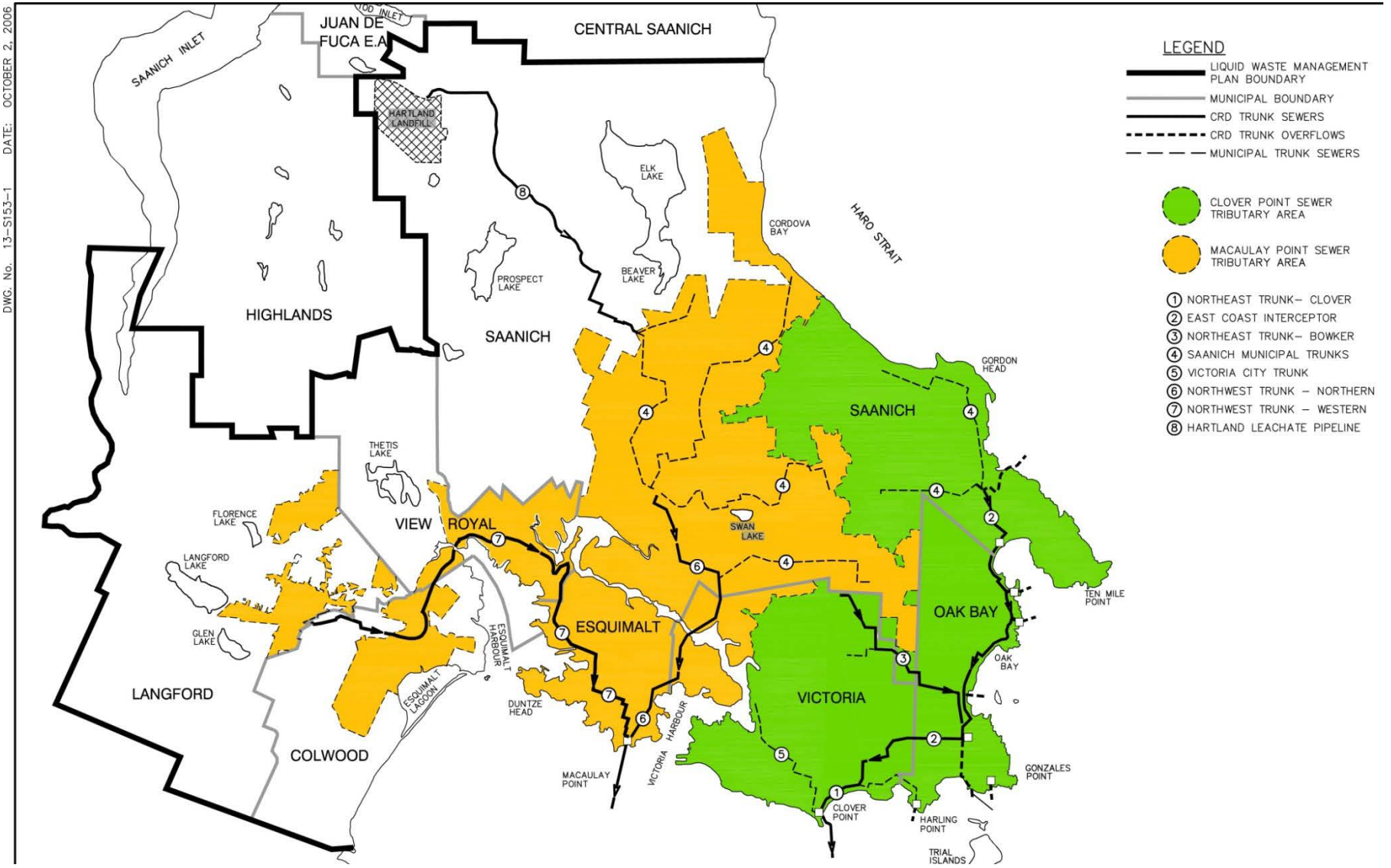


Simplified rendering of a sewage conveyance system

Conveyance System

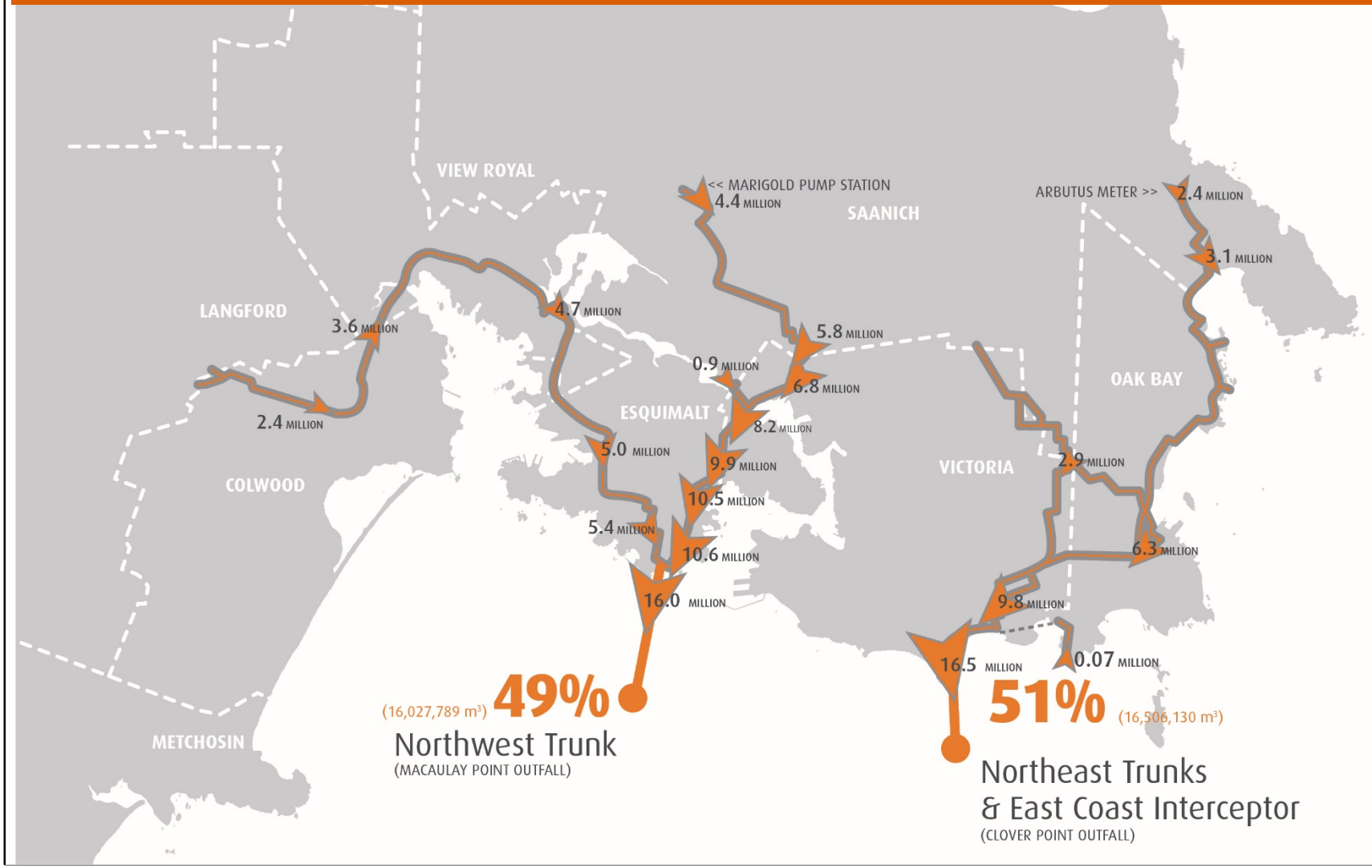


Outfall Catchment Areas



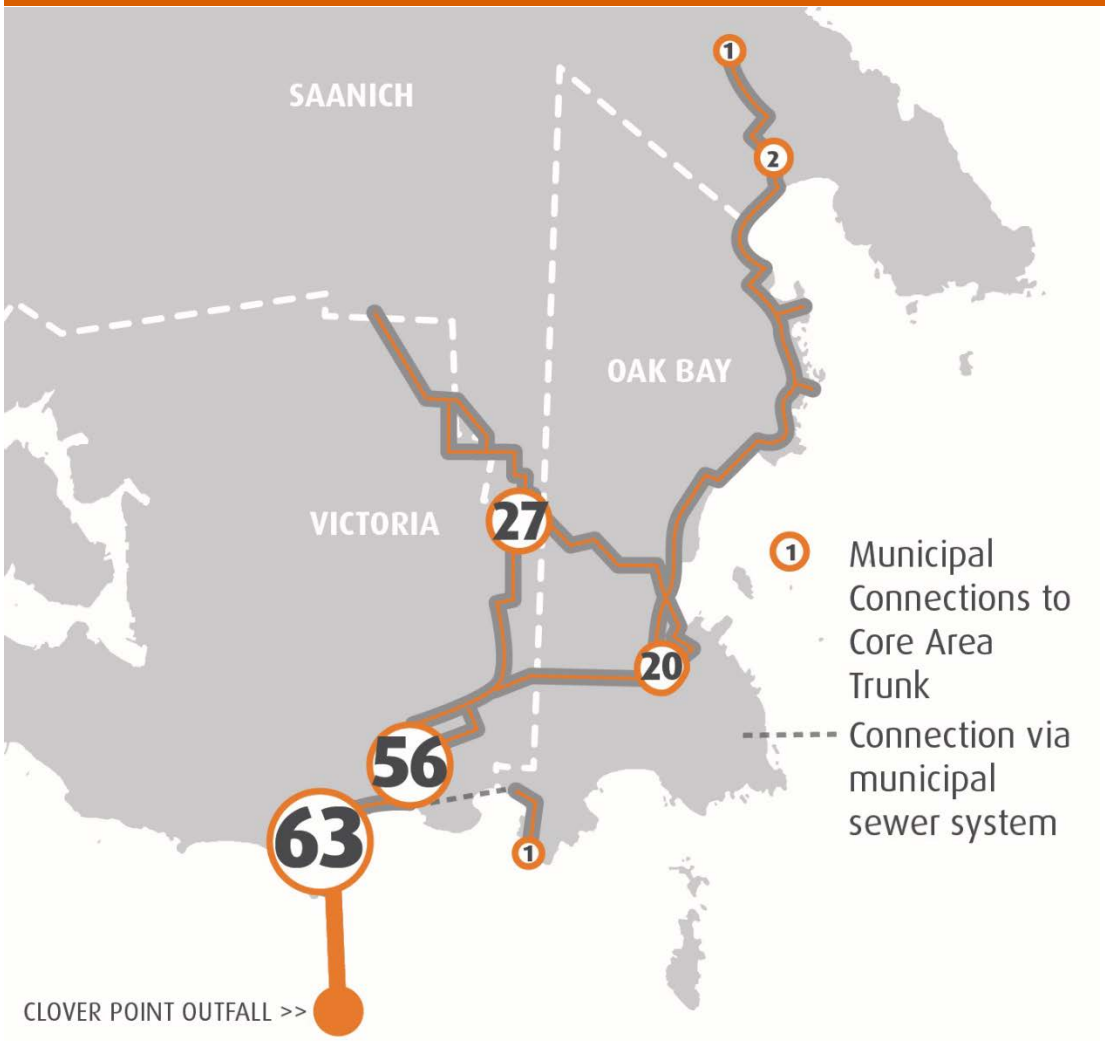
Core Area System Flow Map

Core Area System (106 CONNECTIONS – 32,533,919 m³ annual flow – 2018 FLOW DATA)



Core Area – Eastern System

Northeast Trunks & East Coast Interceptor (63 CONNECTIONS – 16,506,130 m³ annual flow – 2018 FLOW DATA)



61.7% Victoria
10,184,340 m³ *(total annual flow of 12,632,568 m³)*

19.6% Saanich
3,239,493 m³ *(total annual flow of 9,905,189 m³)*

18.7% Oak Bay
3,082,297 m³

Core Area – Western System

Northwest Trunk (43 CONNECTIONS – 16,027,789 m³ annual flow – 2018 FLOW DATA)

41.6% Saanich
6,665,697m³ *(total annual flow of 9,905,189 m³)*

15.3% Victoria
2,448,228m³ *(total annual flow of 12,632,568m³)*

15.1% Langford
2,431,450 m³

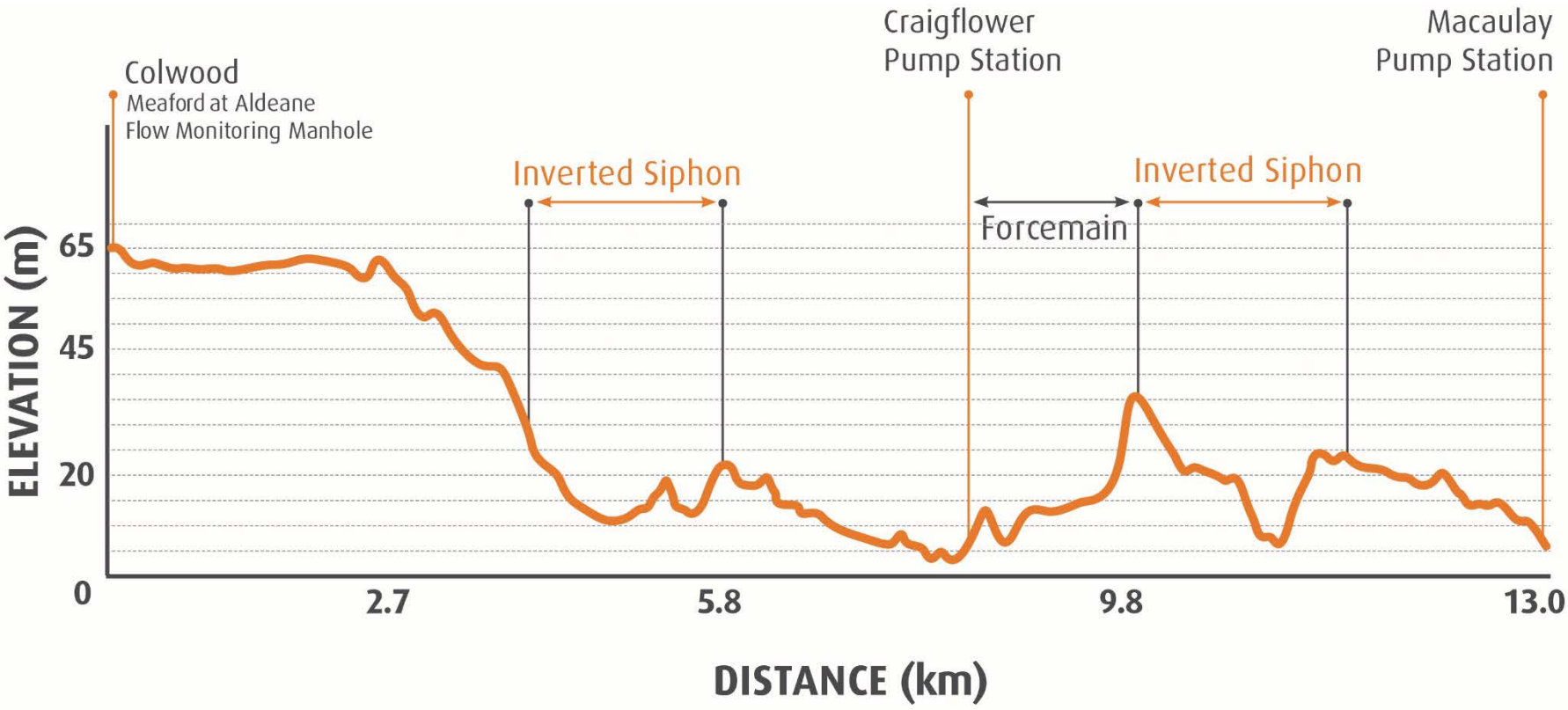
14.2% Esquimalt
2,270,787m³ *(including DND)*

7.3% Colwood
1,168,081m³

5.1% View Royal
818,009 m³

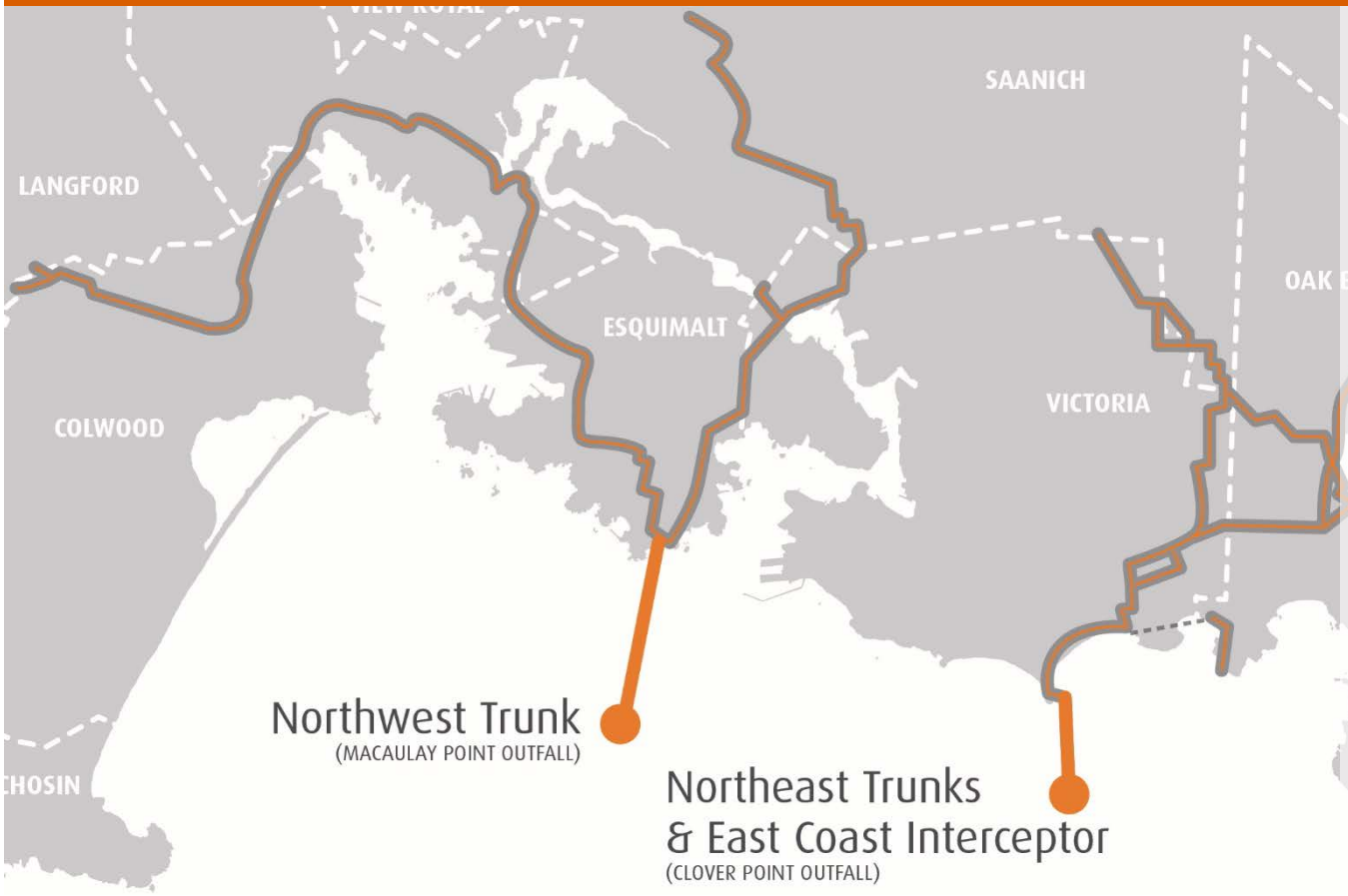
1.4% First Nations
225,537m³

Example: Northwest Trunk (Western Section) Ground Surface Profile



Core Area System by Municipality

Core Area System (106 CONNECTIONS – 32,533,919m³ annual flow – 2018 FLOW DATA)



38.8% Victoria
12,632,568m³

30.4% Saanich
9,905,189m³

9.5% Oak Bay
3,082,297m³

7.0% Esquimalt
2,270,787m³ *(including DND)*

7.5% Langford
2,431,450 m³

3.6% Colwood
1,168,081 m³

2.5% View Royal
818,009 m³

0.7% First Nations

Core Area System Capacity by Municipality

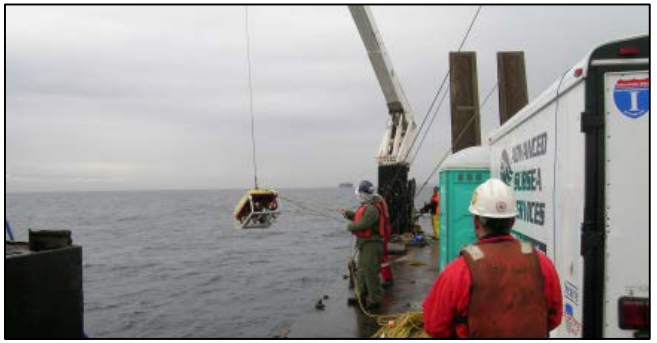
	Actual Average Dry Weather Flow for 2018 (ML/day)	Requested Capacity (ML/day)	Allocated Design Capacity (ML/day)	% of Total
Colwood	2.7	4.1	4.70	4.35%
Esquimalt (DND included)	4.2	6.2	7.10	6.57%
Langford	6.0	12.4	14.12	13.08%
Oak Bay	5.2	5.8	6.62	6.13%
Saanich	21.8	28.8	32.89	30.45%
Victoria	29.0	33.5	38.30	35.46%
View Royal	2.2	3.1	3.54	3.28%
First Nations	0.4	0.6	0.73	0.68%
TOTAL	**71.5**	**94.5**	**108.00**	**100.00%**

Current Conveyance System Funding

- Operating costs:
  - Based on municipal flow inputs
  - Each trunk sewer has distinct budget - requisitioned annually
  - Total 2019 Trunk Operating Budget: $7.6M
  - Total 2019 Trunk Debt Budget: $3.1M

- Operating Budget Context:

Services Administration	11%
LWMP & Environmental Programs	27%
Operating, Maintenance & Engineering	41%
Maintenance Reserve & ERF	3%
Residuals Disposal Expenses	3%
Regulatory Permit Fees	6%
Electrical & Other Utilities	9%
	100%



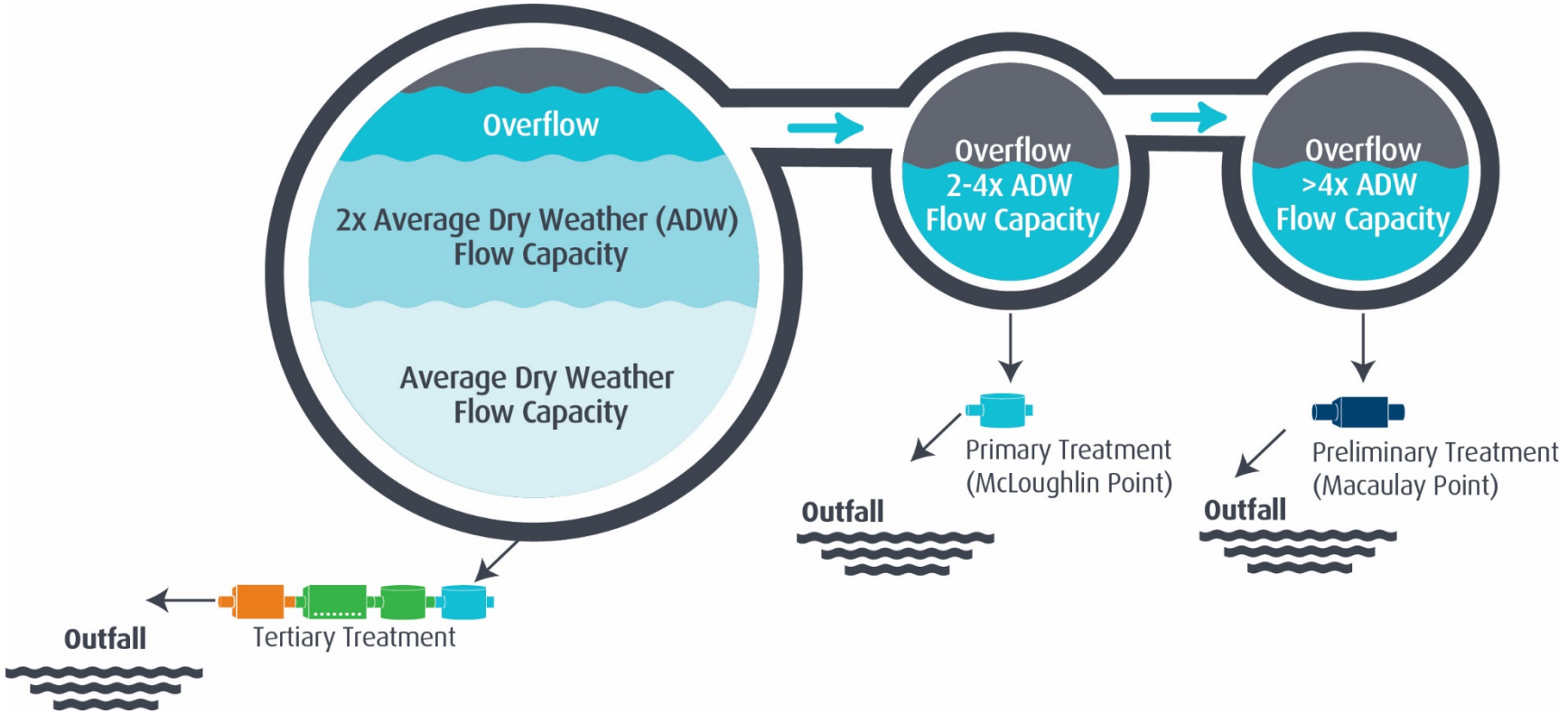
Current Conveyance System Funding

- Capital costs:
  - apportioned on basis of **design capacity benefit** (i.e., additional conveyance capacity to each participant); or
  - where no capacity increase, apportioned on basis of **maximum allocated capacity** of each participant in the 'facility'
  - each project funded through reserves or debt – debt servicing is requisitioned annually

The Core Treatment Plan

Reducing Probability of Overflows

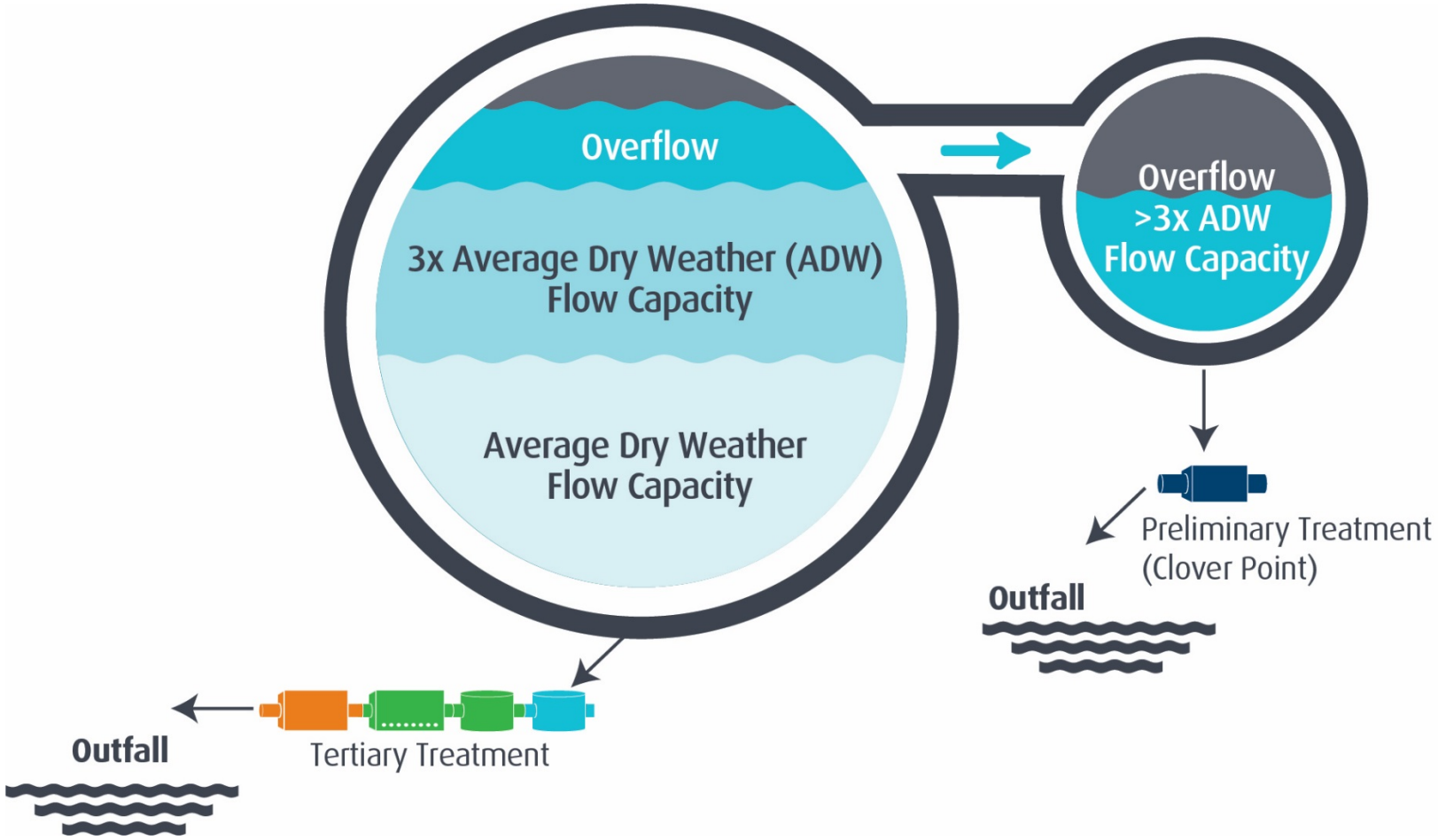
Macaulay Point Requirements



The Core Treatment Plan

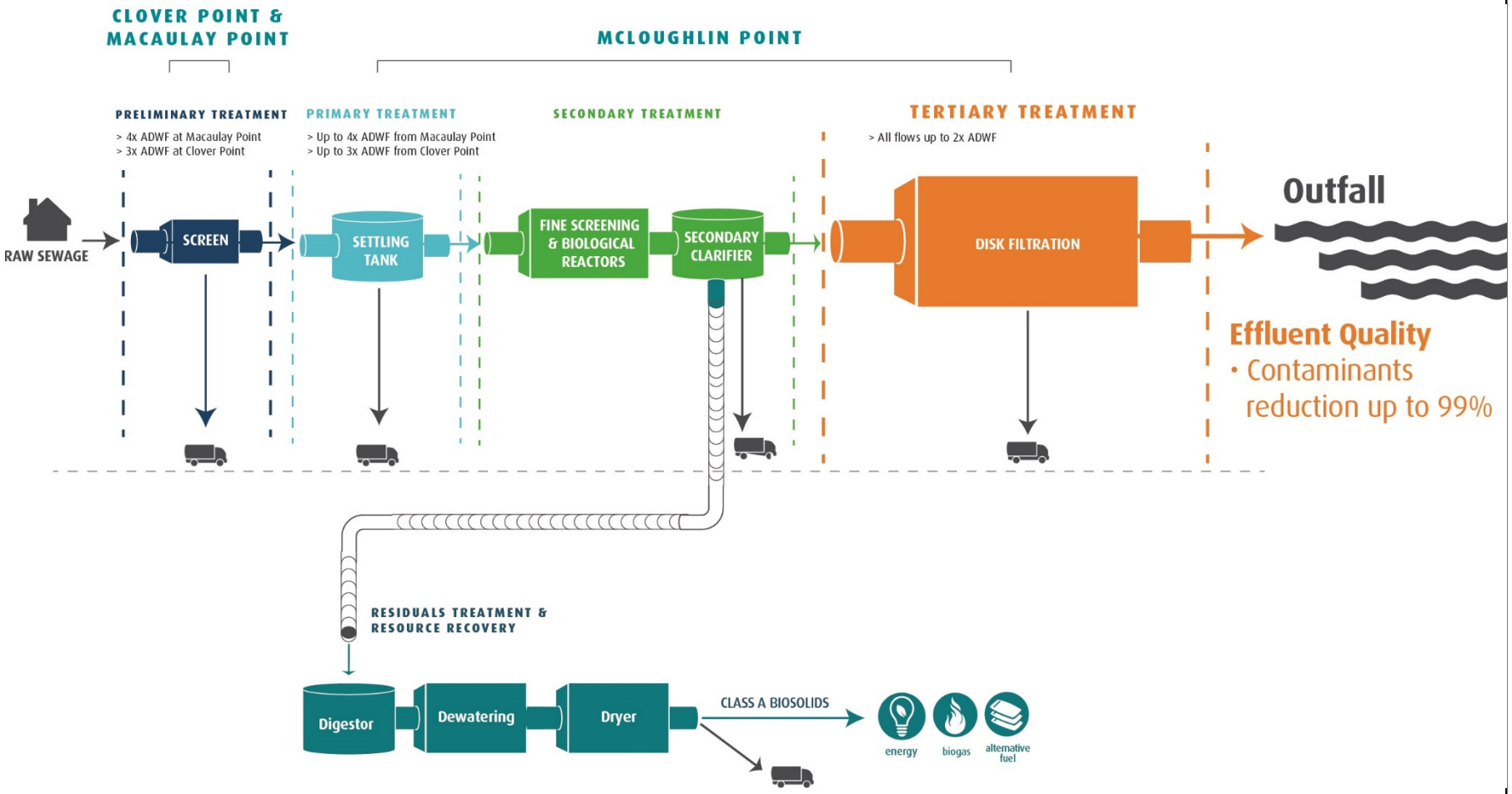
Reducing Probability of Overflows

Clover Point Requirements



The Core Treatment Plan

Treatment System Overview



Questions?