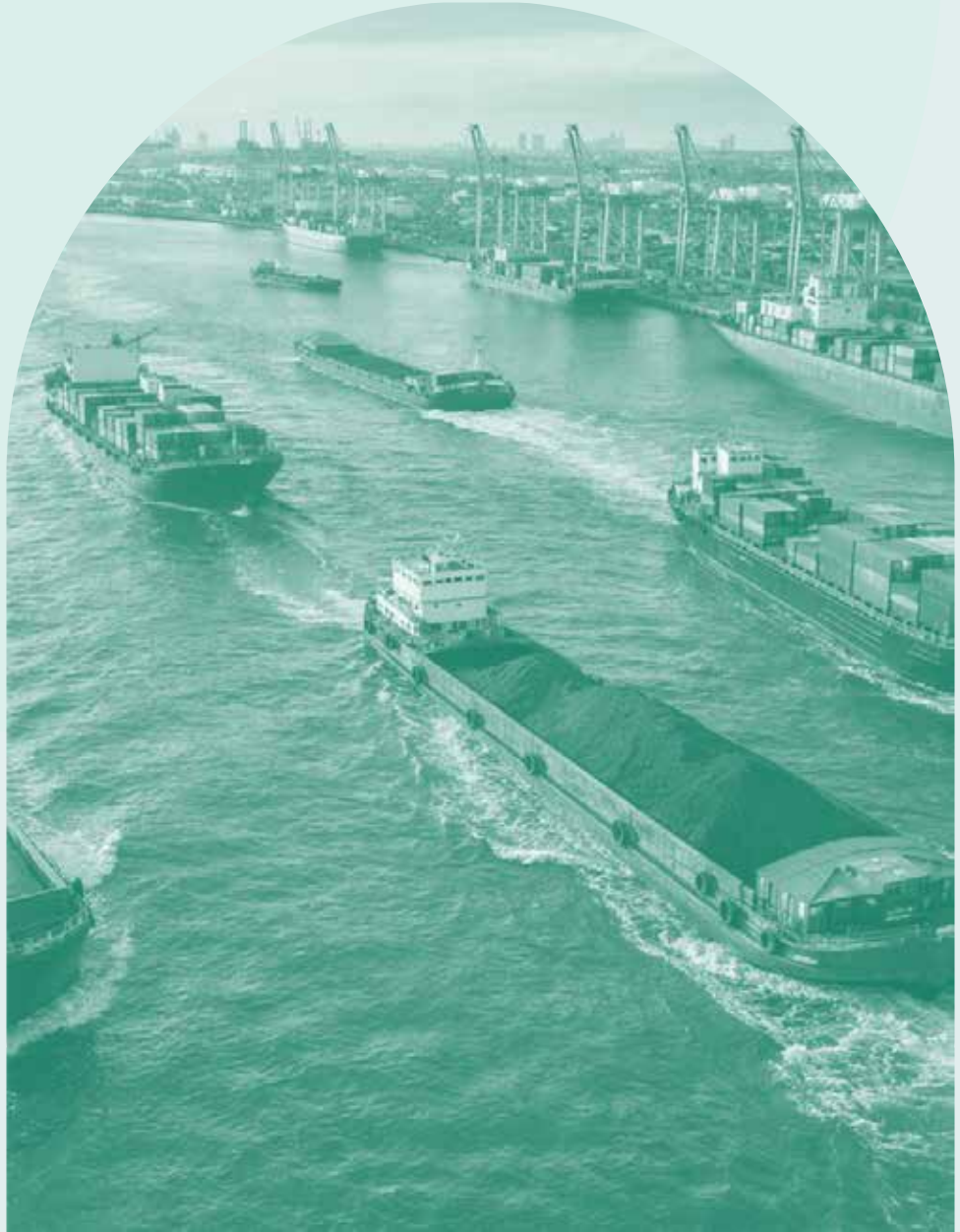
GRT

# Ports as Catalysts

Building the circular economy from the shore up.



# Ports Are Living Systems

01 Constant flow of materials, energy, and trade

02 Interconnected infrastructure and feedback loops

03 Efficiency is already embedded in port operations

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# The Hidden Inefficiency Beneath our Feet

**01.** Dredge, sediment, and excess soil moved every year

**02.** Treated as waste rather than resource

**03.** Cost, land use, and logistics implications

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# The Linear Model

Dredge and soil exported for disposal

Clean aggregate imported for construction

Same material, moved twice

## Traditional Linear Economy

Mine, Build, Dig, & Dispose

Mine virgin material (finite resource)

Haul long distance to city

Use material in new development

Excavate creating excess soils

Haul long distance to landfill

Dispose in landfill finite capacity; difficult to permit new

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# Why the Linear Model Persists

01 Contamination risk

02 Regulatory complexity

03 Operational continuity requirements

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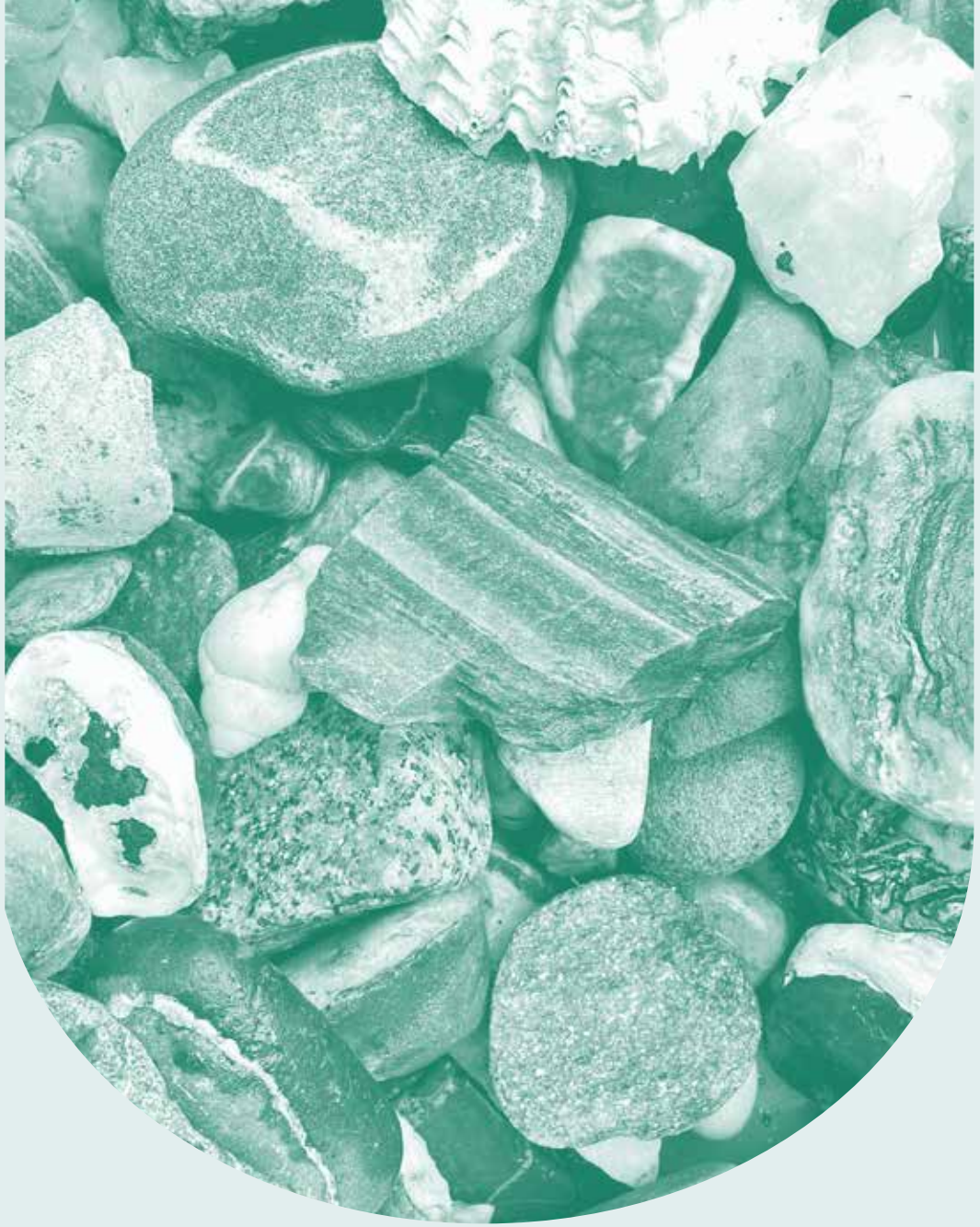

# Turning Liability Into Resources

1. Contaminated soils & dredgeate are common port challenges
2. Separation, treatment, and reuse technologies
3. Liability transformed into compliant material

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# How Resource Regeneration Works

- Physical separation & targeted treatment
- Contaminants isolated and managed safely
- Clean aggregate recovered for reuse

# On-Site Supply of Regenerated Material


**01.** Clean sand, aggregate, and contouring medium

**02.** Treated water meeting discharge requirements

**03.** Residuals safely isolated and managed

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# Site Conditions Determine Water Design

- System can use surface/storm water
- Water treated and recirculated continuously
- Can clean excess Port water

# GRT Nanaimo, Canada: Proof of Concept

Former waste stream now supplies construction aggregate

Reduced disposal and trucking distances

Proven, regulated, and operational

# Pacific Coast Expansion: Scaling Circular Efficiency

01. Building on Nanaimo’s proven model

02. Integrated water treatment and material recovery

03. Circular efficiency at regional scale

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# The Circular Model

# The Efficiency Dividend

- Infrastructure upkeep
- Contaminated land cleanup
- Lower costs
- Protected industrial land base
- Shoreline resilience
- Reduced trucking
- Local jobs

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# Where to Start?

- Understand material flows, dredge volumes, shoreline maintenance
- Analyze existing land base and look for opportunities
- Consider efficiency in terms of circularity, as well as throughput

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# Regenerative Port Model

01. Ports already manage complex systems


02. Efficiency compounds over time

03. Circularity adds a regenerative feedback loop

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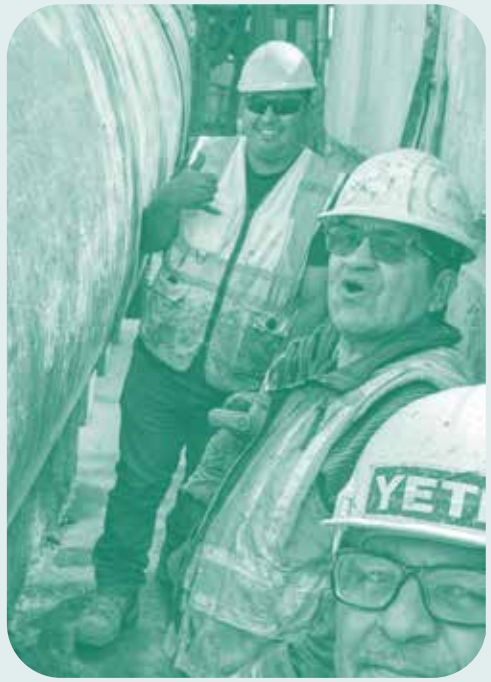
# About GRT

- Multidisciplinary team: engineers, scientists, environmental & resource industry professionals
- Founded 2017 — first facility was barge-mounted, processing federal dredge in mobile conditions
- Nanaimo land-based facility opened 2021
- First resource regeneration facility in Canada
- Only facility in North America converting contaminated dredgeate into usable aggregate





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# How We Work With Ports

- Co-located or port-adjacent facilities
- Designed to operate alongside active port uses
- Long-term partnerships, not one-off projects

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