



# Environmental Compliance for Sediment Remediation in Canada

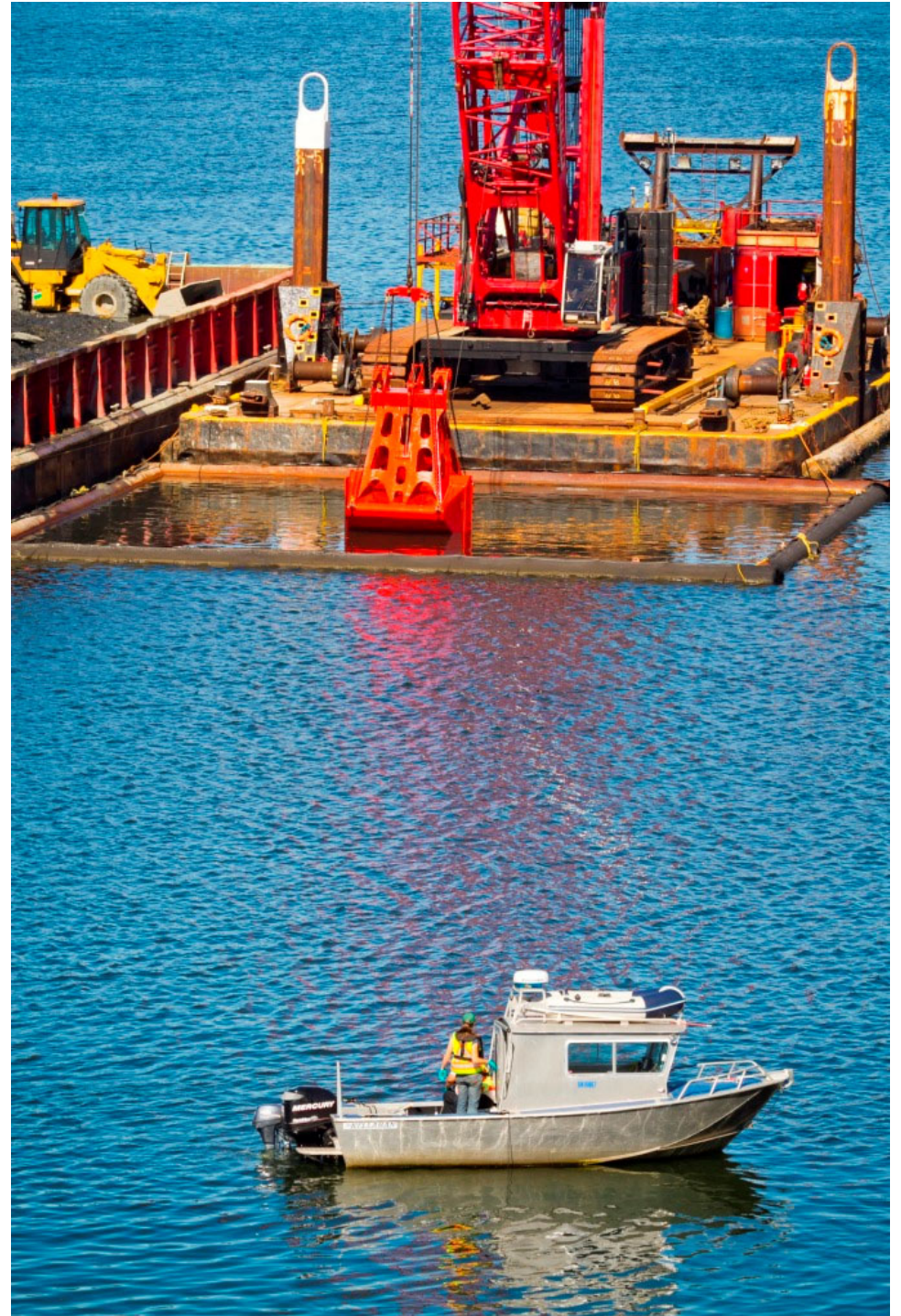


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# Outline

- Regulatory structure in Canada
- Project-specific environmental compliance
  - Performance criteria
  - Monitoring requirements
  - Project controls
- Case studies



# Regulatory Structure in Canada

- Provincial and federal regulations
- Water quality protections



Fisheries and Oceans  
Canada



Environment and Climate  
Change Canada



Health  
Canada



Ministry of  
Environment

- Water quality guidance
  - Clean maintenance dredging



# Federally Led Projects

- Regulatory authority delegated to federal agencies



Public Services and  
Procurement Canada



Department of National  
Defence



Transport  
Canada

- Environmental performance criteria
  - Protect aquatic life
  - Minimize dredge residuals
  - Prevent recontamination
  - Address habitat impacts

# Environmental Compliance Requirements



**Water Quality  
Performance  
Criteria**



**Environmental  
Compliance  
Monitoring**



**Controls for  
Dredging and  
Capping**

# Requirements



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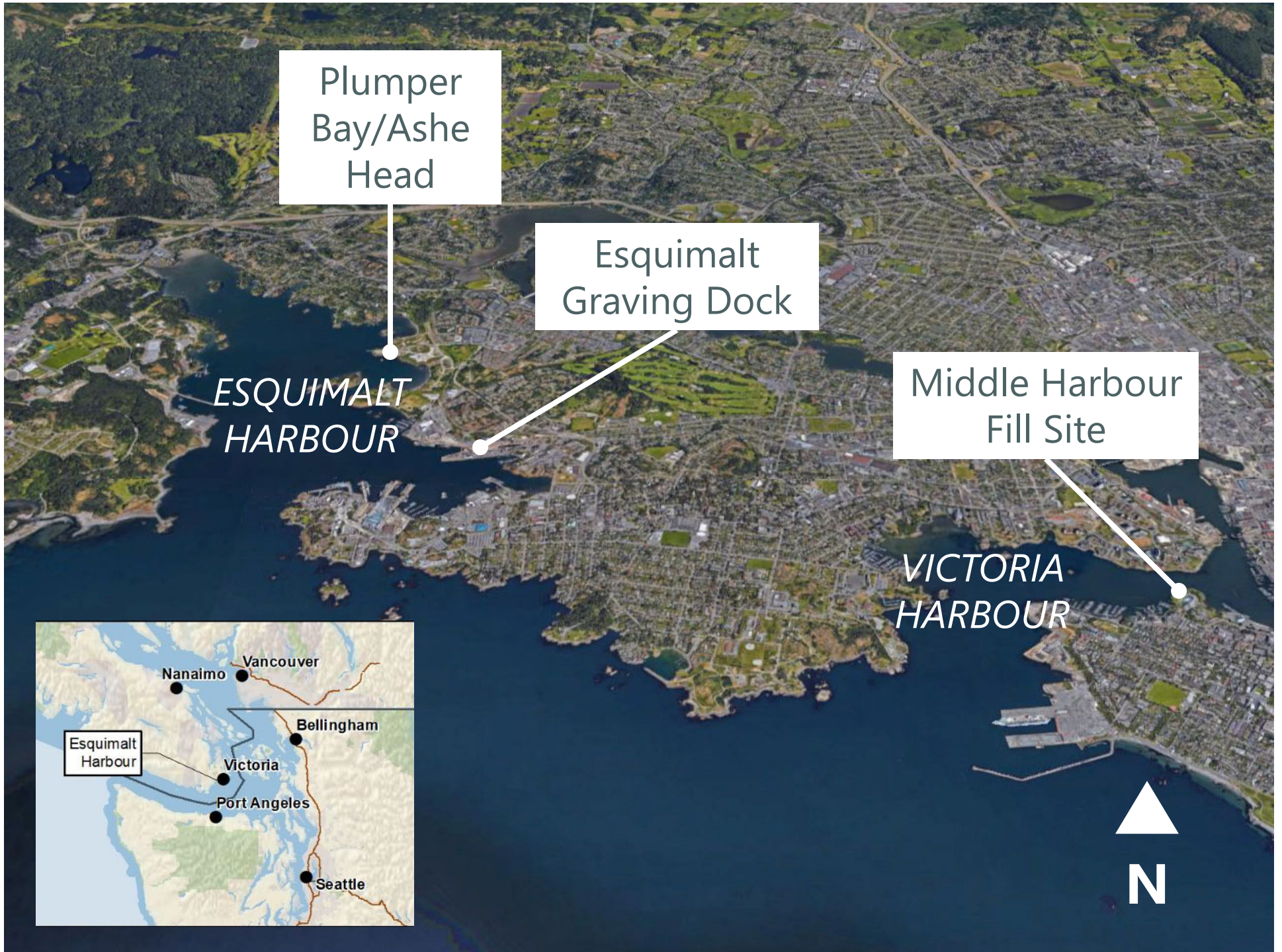


## *Similarities*

- In-water timing windows
- Protections for aquatic life and listed species
- Environmental review
- Dredging best management procedures

## *Differences in Canada*

- Few permits
- Project-specific water quality criteria
- Limited oversight



Plumper  
Bay/Ashe  
Head

Esquimalt  
Graving Dock

Middle Harbour  
Fill Site

*ESQUIMALT  
HARBOUR*

*VICTORIA  
HARBOUR*



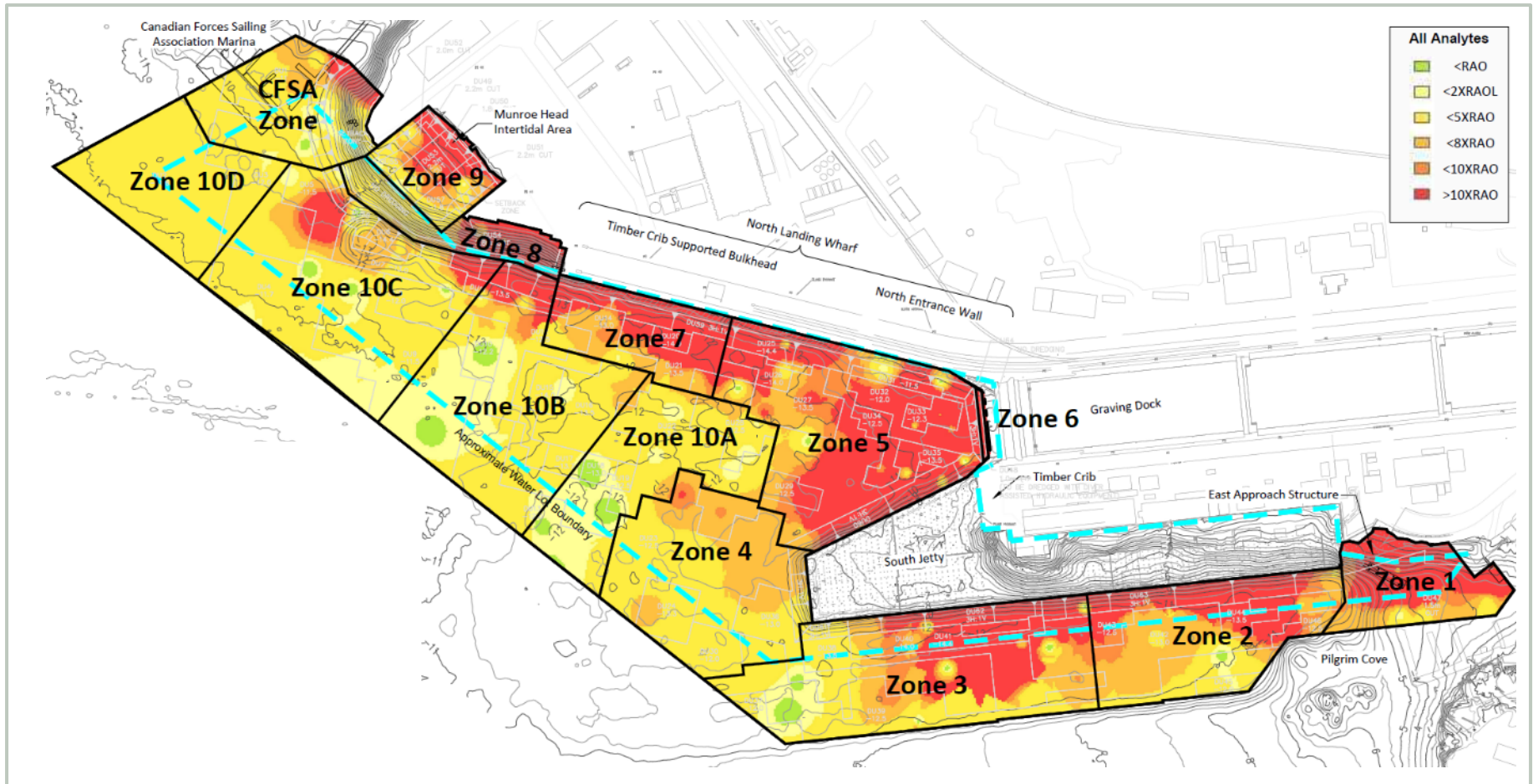


# Esquimalt Graving Dock



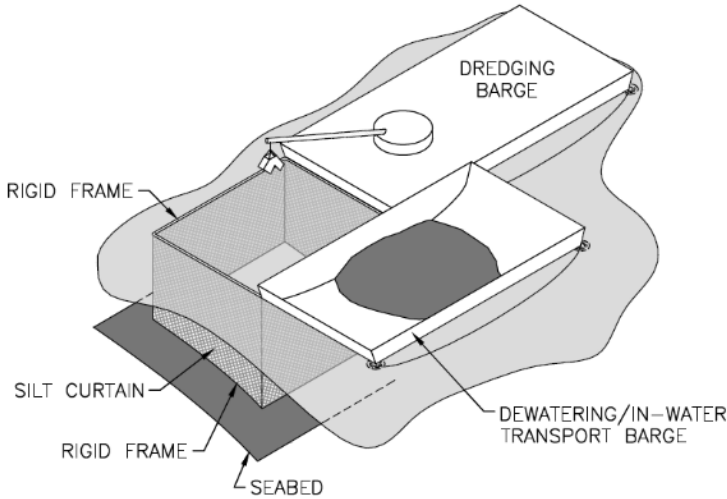


# Dredge Units

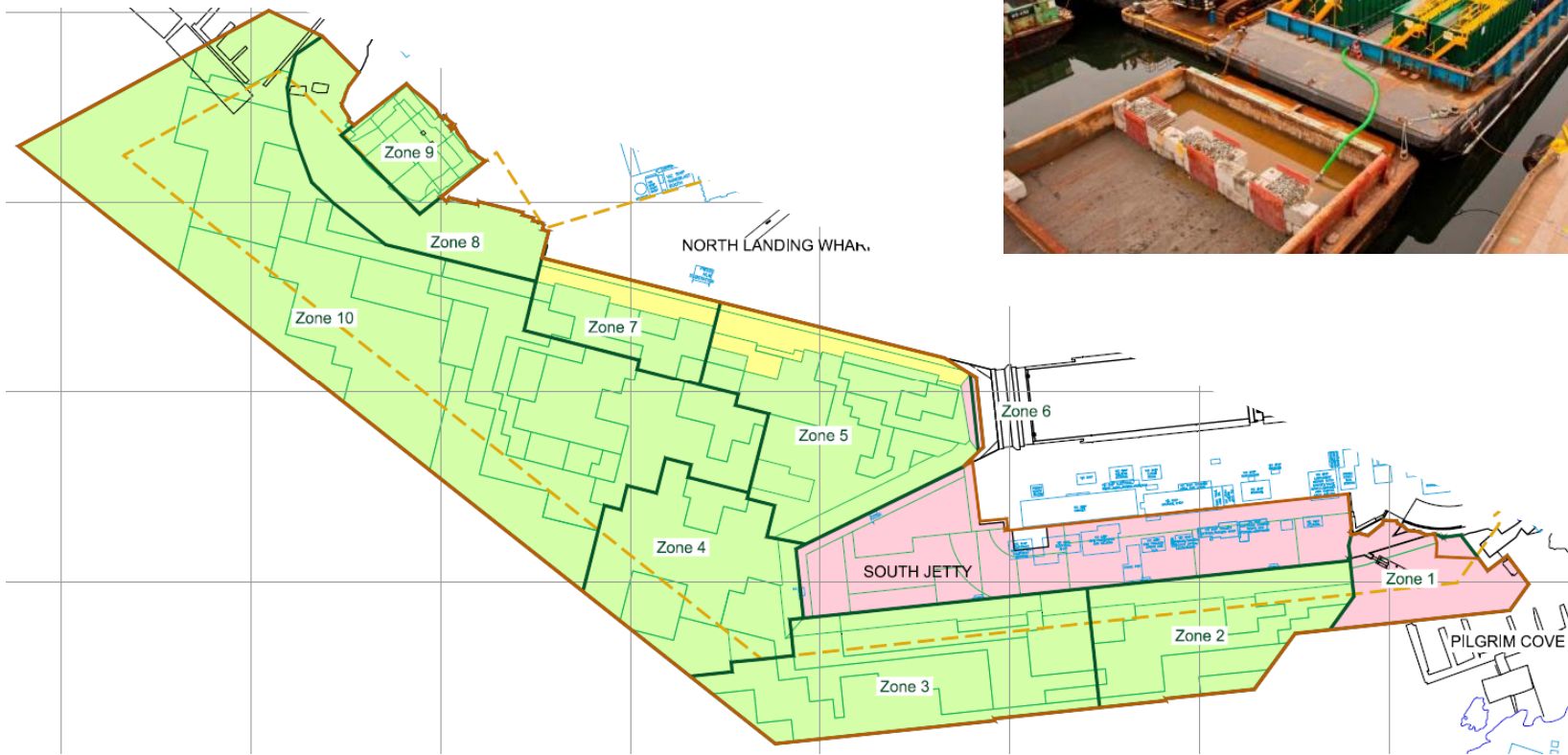


Legacy contaminants: metals, TBT, PAHs, and PCBs

# Silt Curtain

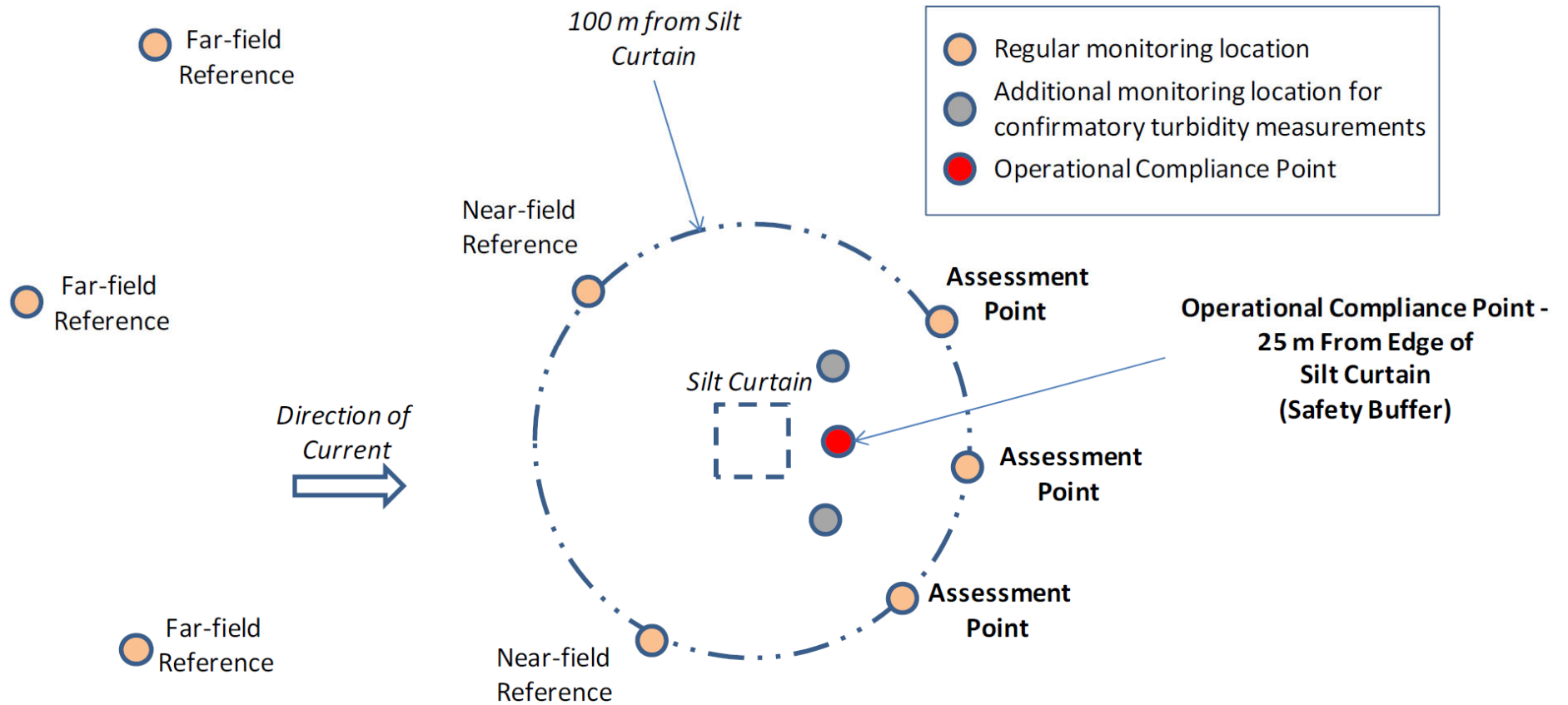


# Water Quality Performance Criteria – Discharge Limits

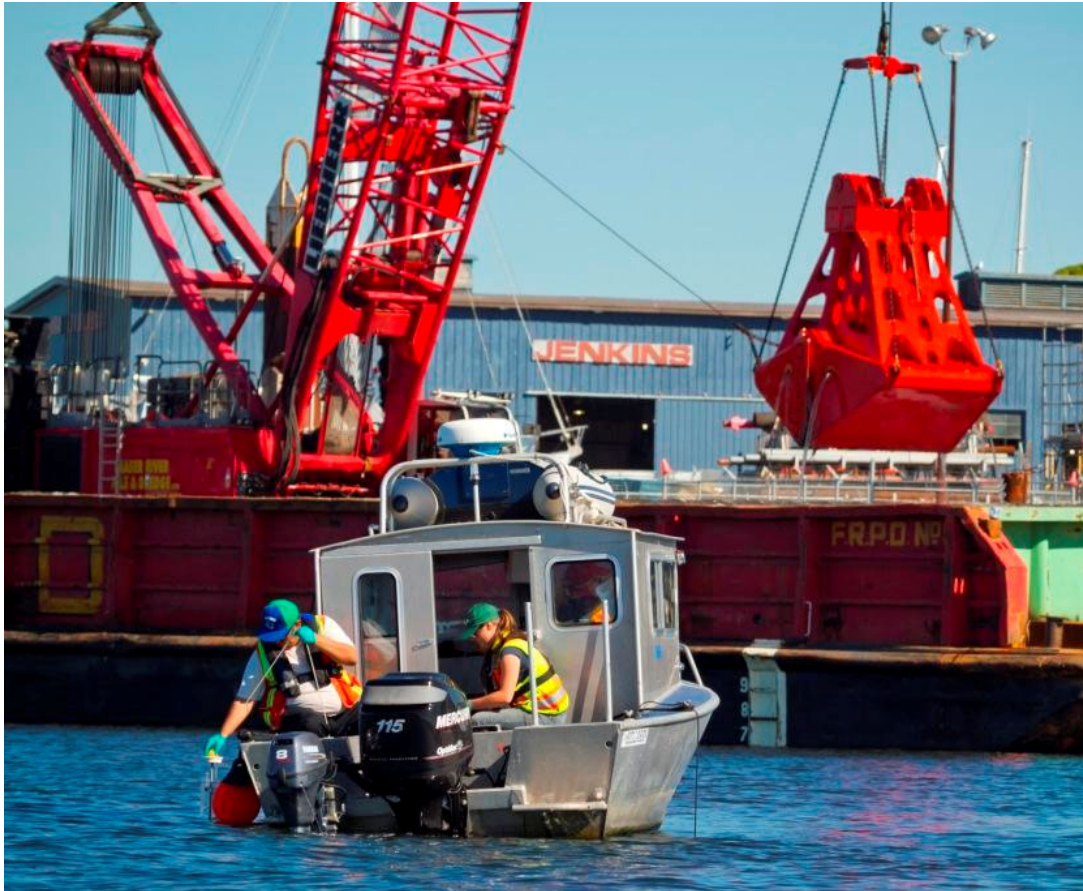




# Water Quality Performance Criteria – Mixing Zones

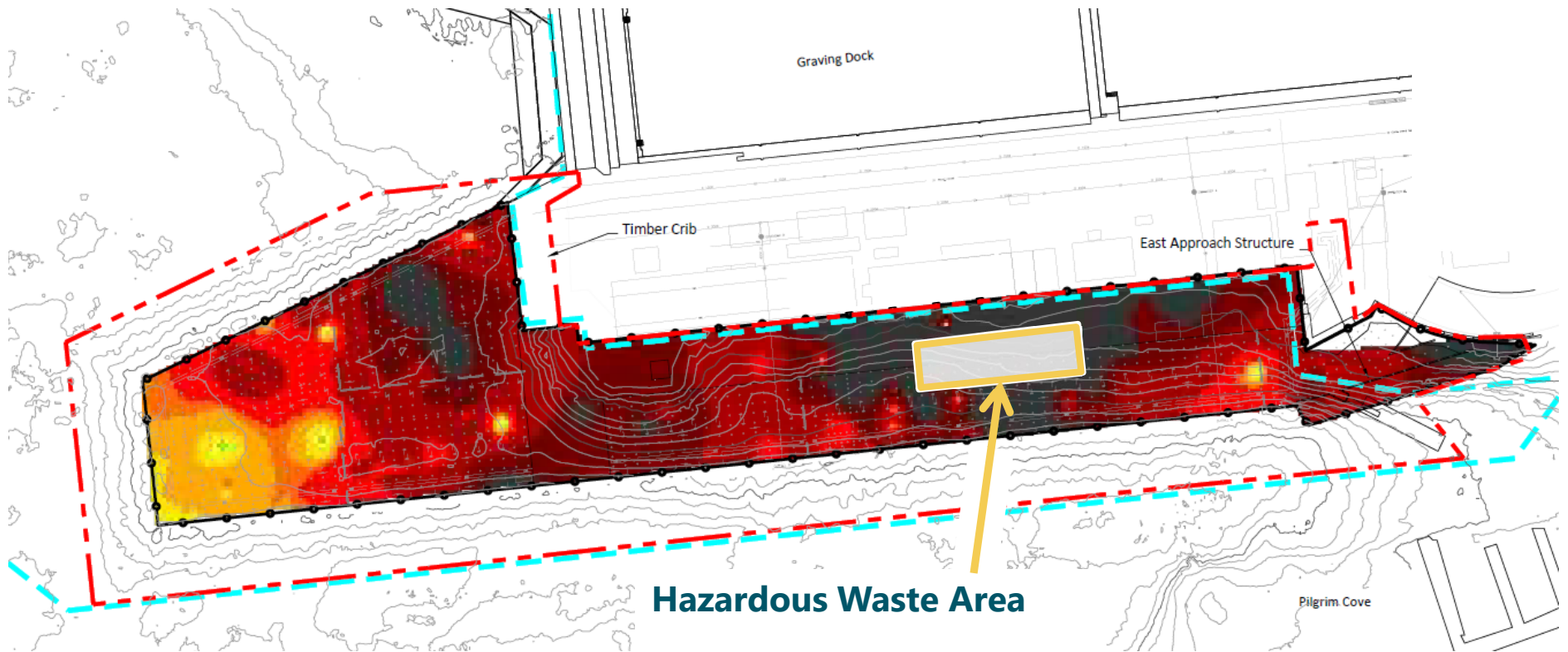


# Intensive Water Quality Monitoring



- Field turbidity monitoring
- Laboratory analysis
  - TSS
  - Contaminants

# Recontamination Considerations



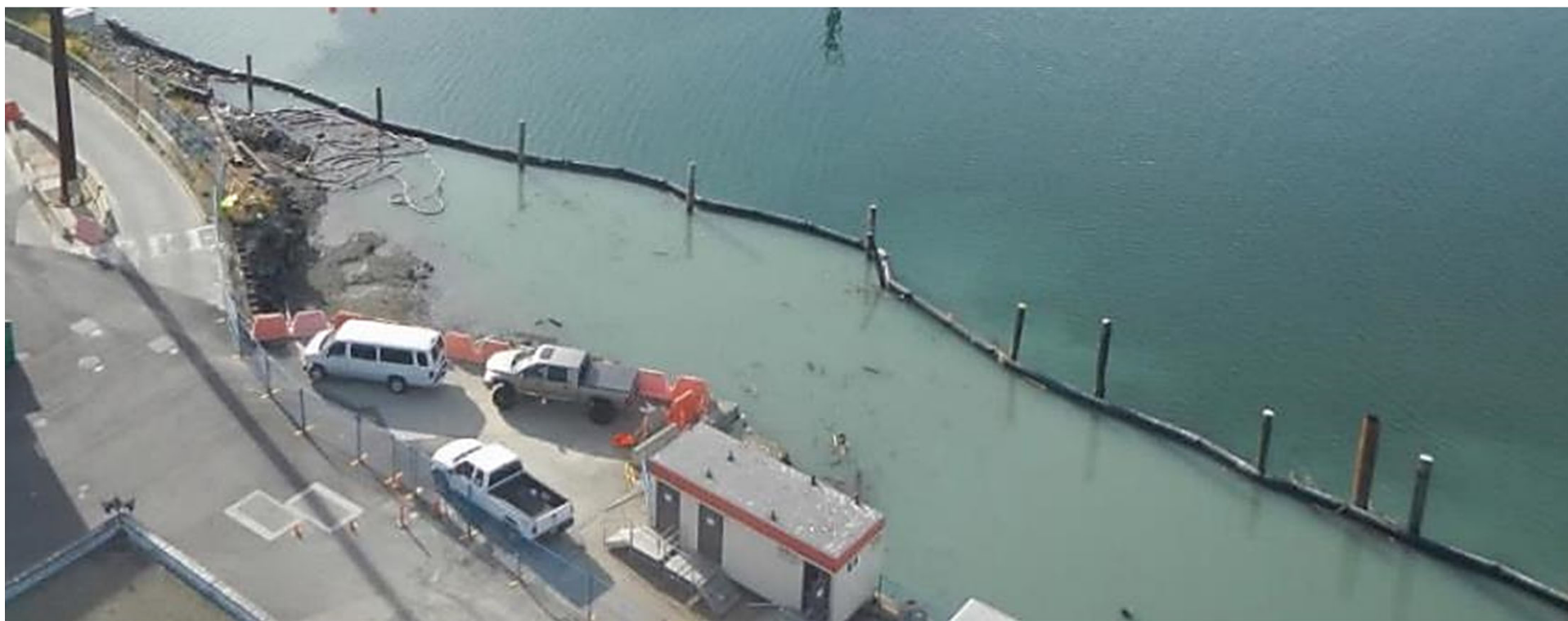


# Recontamination Considerations



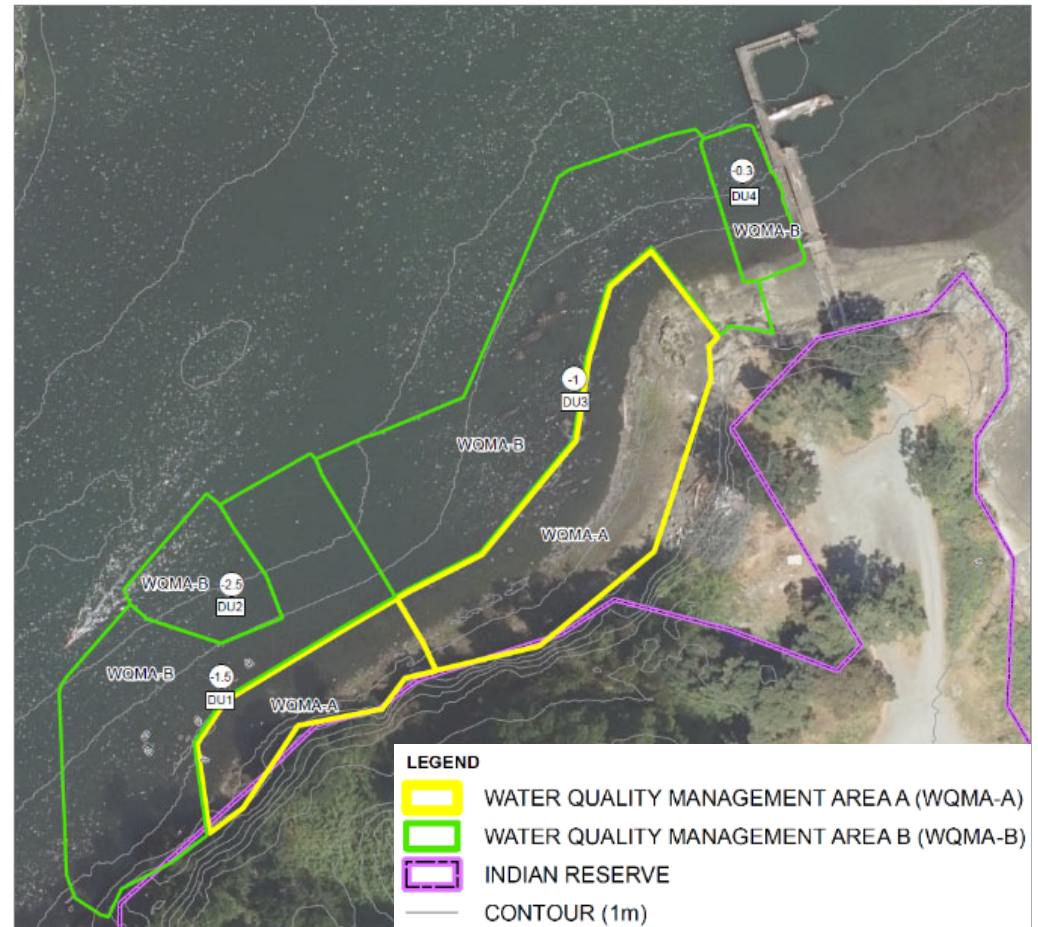
# Water Quality Monitoring Visual Observations

- In Situ
- Laboratory



# Plumper Bay/Ashe Head Remediation

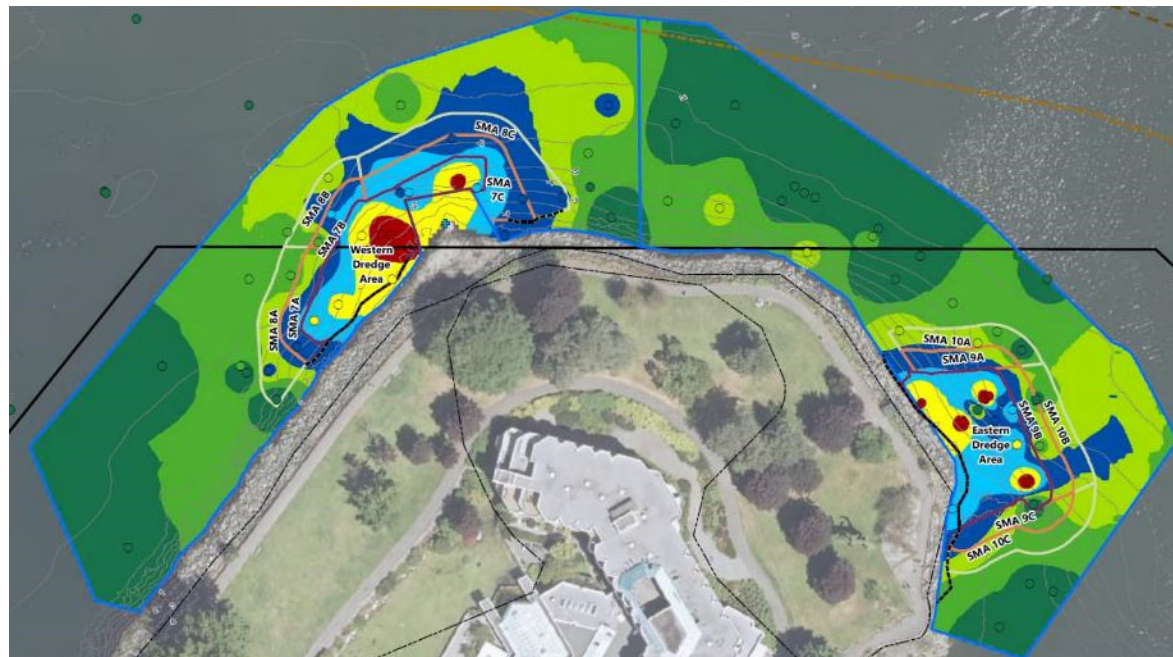
- Consistent water quality criteria
- Passive dewatering allowed after testing





# Middle Harbour Fill Site Remediation

- Hazardous waste level PCBs > 50 mg/kg
  - Silt curtain required
- Water quality and sediment monitoring
- Residuals management cover placement





## Conclusions

- Negotiated thresholds led to practical application of water quality criteria
- Intensive daily water quality monitoring proved protectiveness
- Recontamination and resuspension controls were effective

# Questions/Discussion

