

Sturgeon Bank Sediment Enhancement Pilot Project

Initial Problem: Impact of Navigational Infrastructure

1. **River Training Structures:** Originally, river training structures constructed nearly a century ago altered the natural flow of the Fraser River. These structures were designed for navigation efficiency but inadvertently diverted freshwater and sediment away from Sturgeon Bank, contributing to the marsh's recession and sediment deficit.
2. **Dredging for Navigation Channels:** Regular maintenance dredging in the Fraser River Estuary, essential for navigational safety and efficiency, led to the removal of over 1.8 million cubic metres of sediment annually. This sediment, crucial for the natural sustenance of the tidal marsh, was disposed of at sea, further depriving the Sturgeon Bank of these foundational materials.

Current Solution: Repurposing Navigational Activities

1. **Beneficial Use of Dredged Material:** Turning a challenge into an opportunity, the project now uses the dredged material from these navigational channels as a resource for ecological restoration. The sediment is strategically pumped onto the Sturgeon Bank foreshore to counteract previous losses and support marsh growth.
2. **Sediment Enhancement Technique:** Utilizing a temporary floating pipeline, the project mimics natural sedimentation processes. This approach not only restores the tidal marsh but also maintains the navigational channels, ensuring ongoing river traffic safety.
3. **Harmonizing Navigation with Ecological Goals:** The project demonstrates a sustainable approach to river management, where navigational infrastructure maintenance contributes positively to ecological restoration, rather than detracting from it.
4. **Monitoring and Adaptive Management:** Continuous monitoring ensures that sediment addition enhances the marsh without adversely affecting navigation. This adaptive management approach allows for adjustments to balance ecological restoration with navigational requirements.

Through this transformation, the project exemplifies how navigational infrastructure, once a contributing factor to ecological degradation, can be innovatively repurposed to play a crucial role in environmental restoration, specifically in the enhancement of the Sturgeon Bank tidal marsh.

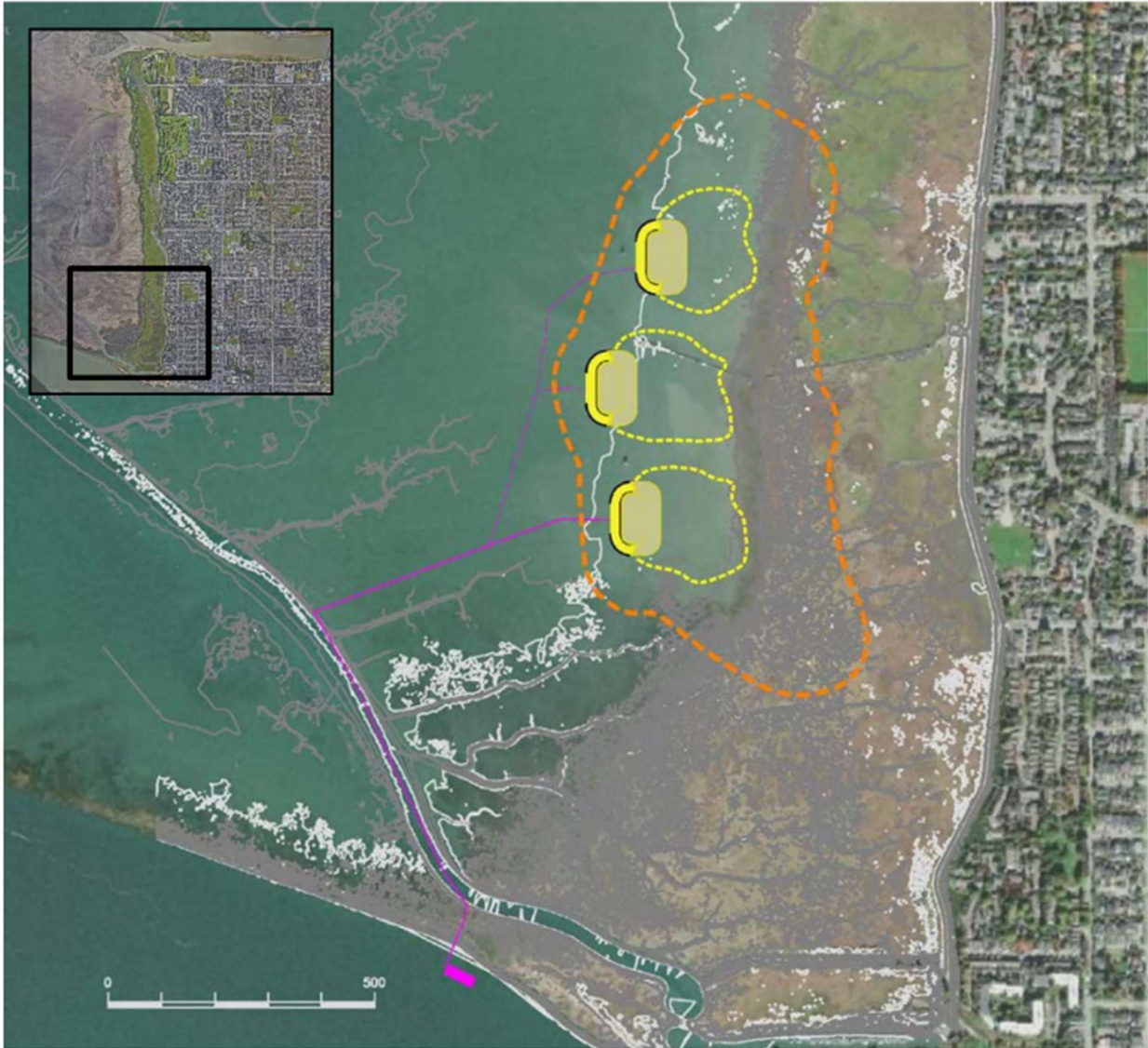


Figure 1. 2020 conceptual idea for pilot project. Yellow polygons indicate approximate locations of three large disposal areas for mounds of fine sands and silts near to the 3.1 m CD (or 0 m Geodetic) elevation. Elevation of the mounds varies, but is targeted to be between 0.5 and 0.7 m above existing ground at their highest points. Purple lines indicate proposed location of floating sediment pipeline connected to a dredge ship immediately south of the Steveston North Jetty. Yellow dashed lines indicate the conceptual target area for dispersion of sand-size sediment, while orange dashed lines indicate the target zone for dispersion of fine sediments.

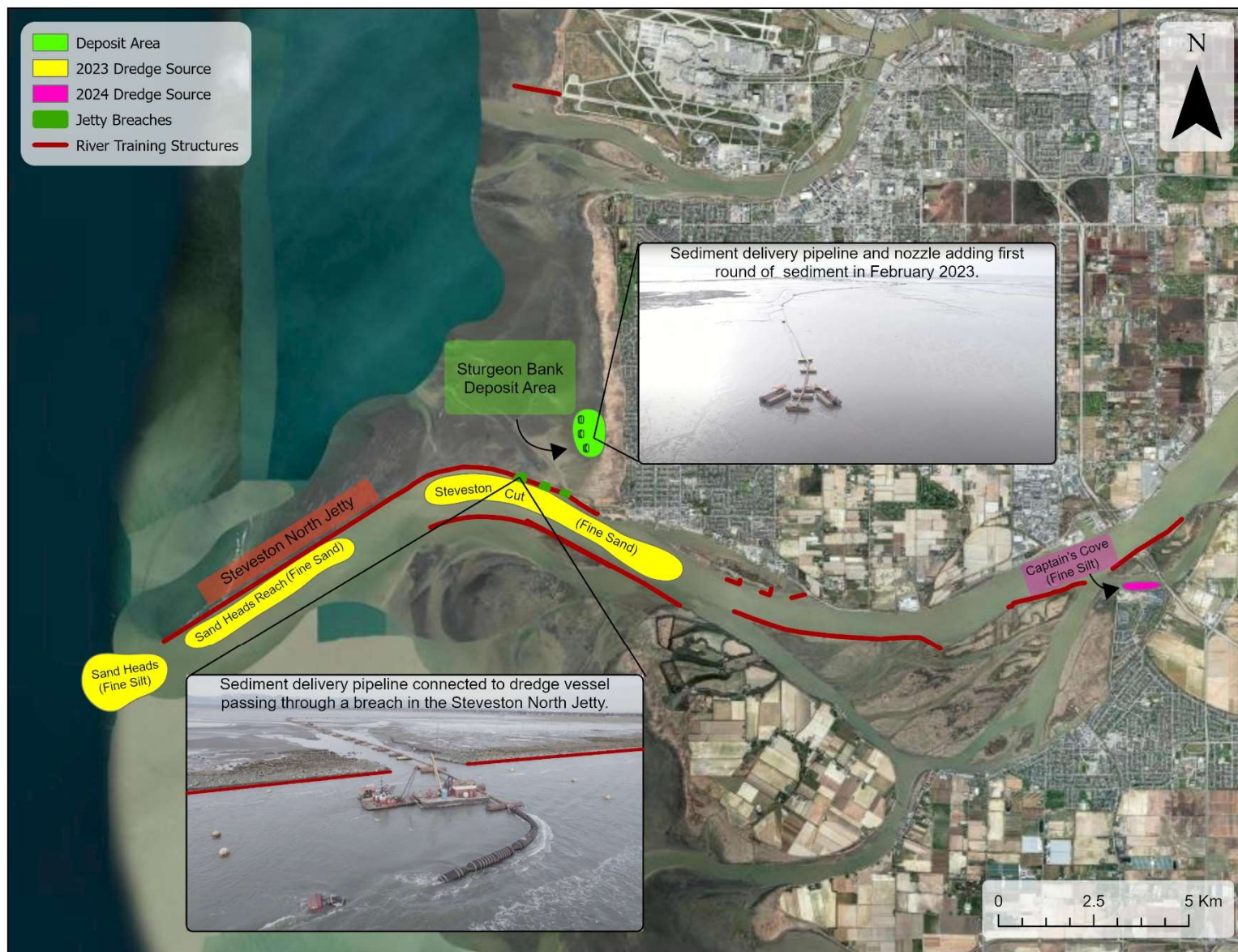


Figure 2. This aerial map illustrates the Sturgeon Bank Sediment Enhancement Pilot Project emphasizing the impacts of historic navigational infrastructure. The colored overlays indicate areas where sediment is deposited at Sturgeon Bank (light green), sources of dredged material for 2023 and 2024 (yellow and pink), jetty breaches (dark green), and river training structures (red).