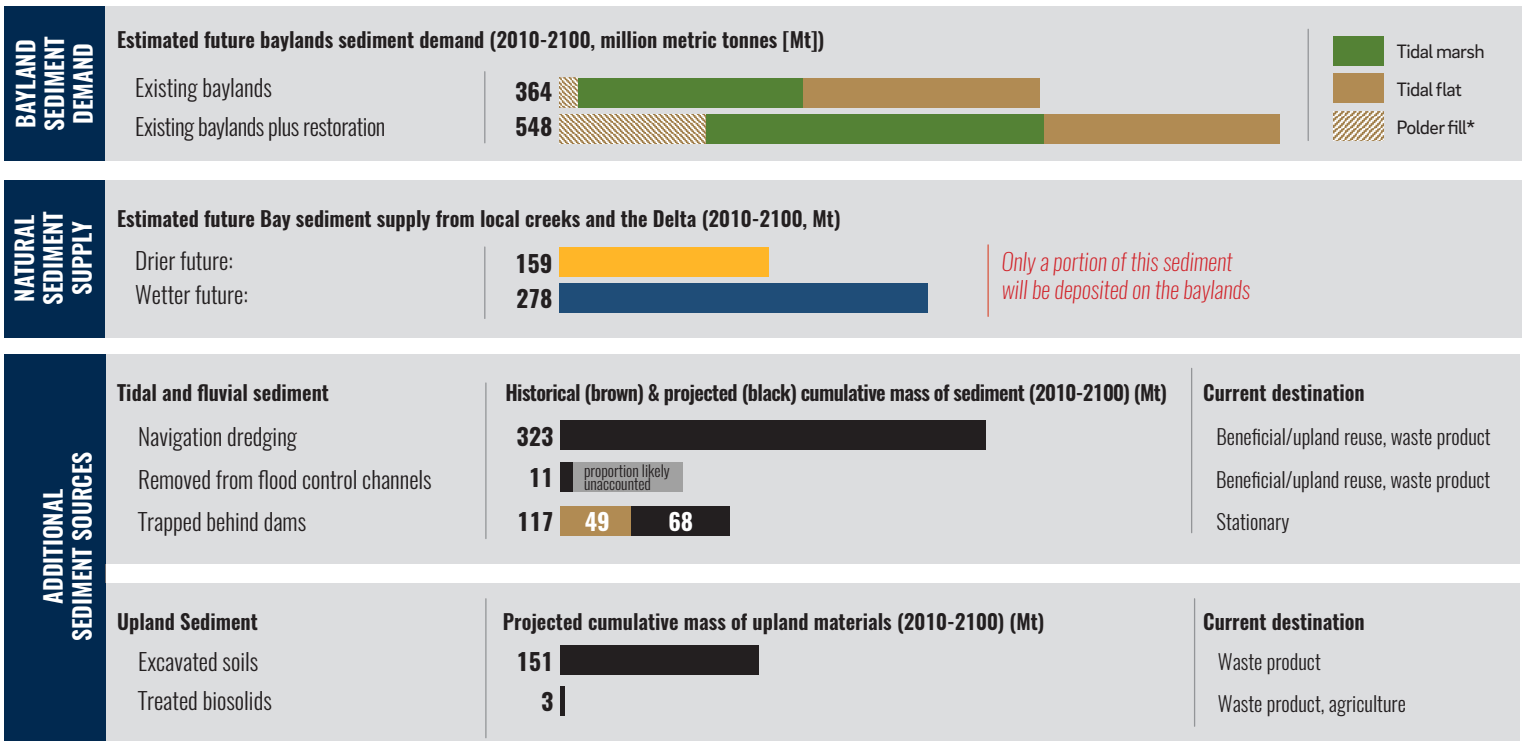
EXECUTIVE SUMMARY

Sediment: A Crisis on the Horizon

The resilience of San Francisco Bay shore habitats, such as tidal marshes and mudflats, is essential to all who live in the Bay Area. Tidal marshes and tidal flats (also known as mudflats) are key components of the shore habitats, collectively called baylands, which protect billions of dollars of bay-front housing and infrastructure (including neighborhoods, business parks, highways, sewage treatment plants, and landfills). They purify the Bay's water, support endangered wildlife, nurture fisheries, and provide people access to nature within the urban environment. Bay Area residents showed their commitment to restoring these critical habitats when they voted for a property tax to pay for large-scale tidal marsh restoration. However, climate change poses a great threat, because there may not be enough natural sediment supply for tidal marshes and mudflats to gain elevation fast enough to keep pace with sea-level rise.

This report analyses current data and climate projections to determine how much natural sediment may be available for tidal marshes and mudflats and how much supplemental sediment may be needed under different future scenarios. These sediment supply and demand estimates are combined with scientific knowledge of natural physical and biological processes to offer a strategy for sediment delivery that will allow these wetlands to survive a changing climate and provide benefits to people and nature for many decades to come. The approach developed in this report may also be useful beyond San Francisco Bay because shoreline protection, flood risk-management, and looming sediment deficits are common issues facing coastal communities around the world.

Comparison of future bayland sediment demand, natural Bay sediment supply, and supply of additional sediment sources.



**Polder fill is the sediment needed to bring deeply subsided areas (polders) slated for restoration up to tidal marsh elevation*

Key Messages

- **Tidal marshes and mudflats are unlikely to receive enough sediment naturally to survive sea-level rise this century.** Restoring thousands of acres of historic marshes to the tides is invaluable for shoreline protection and the health of the Bay, but also increases overall sediment demand.

- **Other local sediment sources offer the potential to help maintain tidal marshes and tidal flats that will be resilient as the climate continues to change.** Preliminary analyses indicate that between now and 2100, sediment trapped in watersheds and dredged from the Bay, as well as soil excavated in construction projects around the region, will likely be greater than the amount of sediment arriving to the Bay from local rivers and the Delta.

- **Management practices need to change quickly to access these other sources of sediment that can help increase the future resilience of tidal marshes and mudflats.** Accessing these supplementary sediment sources will require rapid, unprecedented collaboration among public agencies, industry, and other stakeholders, as well as innovative approaches to sediment management and regulation. This report details a strategy for changing sediment management to increase the resilience of bay shore habitats and improve watershed health.

The range of sediment management actions that should be part of a multi-benefit sediment strategy.