

Abstract:

Littoral drift, or shore drift, is the process by which beach sediment is moved along the shoreline. Drift results primarily from the oblique approach of wind-generated waves and can therefore change in response to short-term (daily, weekly, or seasonally) shifts in wind direction. Over the long term, however, many shorelines exhibit a single direction of net shore drift. Net shore-drift is determined through geomorphologic analysis of beach sediment patterns and of coastal landforms.

Many shorelines can be divided into discrete littoral, or drift, cells, which are independent of one another and for which distinct sediment sources and sinks can be identified. This coverage denotes the extent of individual littoral cells and the direction of net shore-drift within each.

Purpose:

Heightened concerns about the adverse impact of shoreline modifications on geologic processes, and consequently, on nearshore biological resources has increased the need to provide information on longshore sediment transport in digital format.

Supplemental_Information:

During the late 1970s and early 1980s, the Department of Ecology supported Western Washington University in undertaking a series of county-by-county net shore-drift investigations under the supervision of Dr. Maurice Schwartz. Two reports in the early 1990s completed the net shore-drift mapping of Washington's marine shoreline. In addition to an Ecology report, each investigation resulted in a Master's thesis:

Skagit County - Keuler, 1979 Whatcom County - Jacobsen, 1980 King County - Chrzastowski, 1982 Thurston County - Hatfield, 1983 Mason County - Blankenship, 1983 Pierce County - Harp, 1983 Kitsap County - Taggart, 1984 Grays Harbor and Pacific Counties - Bronson, 1984 Jefferson and Clallam Counties (ocean coast) - Mahala, 1984 Clallam County (Strait of Juan de Fuca) - Bubnick, 1986 Parts of San Juan, Snohomish, Island, and Jefferson Counties - Johannessen, 1993 Grays Harbor, Willapa Bay, and the Columbia Estuary -Thomas, 1995

and a USGS publication: Map showing coastal erosion, sediment supply, and longshore transport in the Port Townsend 30- by 60-minute quadrangle, Puget Sound Region, Washington [Keuler, R.F., 1988, United States Geological Survey; Map 1198-E]

These reports have subsequently been compiled and republished as the Ecology reports cited below. Source materials for drift cells were done a different times. Each report in the series covers a different area.

Volume 1: Pacific Ocean and Strait of Juan de Fuca (Pacific, Grays Harbor, Jefferson, and Clallam Counties) [Schwartz et al., 1991, Ecology Report #00-06-30]

Volume 2: South Puget Sound (Mason, Thurston, and Pierce Counties) [Schwartz et al., 1991, Ecology Report #00-06-31]

Volume 3: Central Puget Sound (Kitsap, Pierce, and King Counties) [Schwartz et al., 1991, Ecology Report #00-06-32]

Volume 4: Hood Canal (Mason and Kitsap Counties) [Schwartz et al., 1991, Ecology Report #00-06-33]

Volume 5: Northern Bays and Straits (Whatcom and Skagit Counties) [Schwartz et al., 1991, Ecology Report #00-06-34]

Net Shore-Drive of San Juan, and parts of Jefferson, Island, and Snohomish Counties [Johannessen, 1992, Report 00-06-35]

Net Shore-Drift within Grays Harbor, Willapa Bay, and the Mouth of the Columbia River, Washington [Thomas, 1995, Report #00-06-36]