





COASTAL MARINE GEOLOGIC ENVIRONMENTS

OF THE
PHIPPSBURG QUADRANGLE, MAINE

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SUPRATIDAL ENVIRONMENTS

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			E	nvironment: the par	s just above the rtial influence o	highest high water datum, but und f marine processes and forces.	er			
	Sd	Dunes and Vegetated Beach Ridges	Unconsolidated sand or gravel depos- its capping beach environments. Dunes are subject to storm waves and winds, while gravel beach ridges are subject only to storm wash. Each may	Sm	Fresh-Brackish Marsh	Water-saturated, organic-rich sedi- ments characterized by broad-leafed vegetation tolerant of constant sub- mergence in fresh water. Salinity of interstitial water is less than 5	Se	Eolian Flat	partially vegetated sand flats adjacent to dune fields. Subject to generally northwest winds and occasional storm flooding.	
	Sw	Fresh-Brackish Water	be vegetated with salt-tolerant vegetation. Ponded water behind beach ridges,	Sz	Man-Made Land	ppt. Structures or fill emplaced by man in the nearshore environment.	Sf	Washover Flat	Sand deposits covering salt marshes behind inlet mouths which originate from storm washover or inlet delta deposits on salt marshes. Subject to	
			man-made constrictions on former tidal embayments, or on marsh surfaces transitional between upland and salt marsh environments Salinity of the water is less than 5 parts per thousand (ppt).	Sx	Landslide Excavation and Deposits	Natural excavation into shoreline upland slopes created by large-scale slumping or sliding of bank material and the resulting deposits at the base of the slopes.	Sr	Fluvial Marsh	vegetated river floodplain and bank environments. Characterized by freshwater pond vegetation such as pond liles, reeds, and wild rice. Subject to daily tidal flooding as well as inundation during high river dis-	
					INTERTIDA	AL ENVIRONMENTS			charge periods.	
			E		datum subject to	ghest high water datum and the low twice daily tidal flooding and a marine forces.				
	Marsh 1	within	i environments or isolated depressions vegetated environments located above the level in protected coastal areas.	B5	Low-Energy Beach	Beaches consisting of a wide variety of sediment sizes which are protected from high wave energy. Sediment char-	P3	Mussel Bar	Low mounds of living mussels, Myti- lus edulis, and/or disarticulated and broken mussel shells accumulated	
	M1	High Salt Marsh	Organic-rich sediments densely vegetated primarily with the salt marsh grass Spartina patens (salt-meadow grass). High salt marshes are at the same level as mean high water.			acteristics are dependent upon sedi- ment source, which is usually from up- land scarps immediately shoreward of the beach. Low-energy beaches may ex- hibit growth of salt marsh grass when there is little sediment movement.			by wave shoaling. Mussel bars generally occur at the mouths of estuaries or embayments at tidal channel margins where nutrient-laden oceanic waters first flood flat environments. Mussel bars accumulate on intertidal	
	M2	Low Salt Marsh	Mud or muddy sand embankments sparsely to densely vegetated by the salt marsh grass Spartina alterniflora (salt cord-grass). Low salt marsh exists between mean tide level and mean high water.	Br	Boulder Ramp	Sloping surfaces in the lower intertidal zone veneered by large boulders. This environment is seaward of gravel or boulder beaches on high wave energy shorelines. Boulders are remnant lag deposits of eroded glacial tills. Boulder movement is	F4	Channel Levee	Linear accumulations of sediment a- long margins of tidal channels built several tens of centimeters above the surrounding intertidal flats. Chan- nel levees are constructed from sedi- ment deposited on the flat as the tide rises above the channel margins.	
	МЗ	Marsh Levee	Channel-margin sediments vegetated with salt-meadow grass which exist up to several tens of centimeters above the salt marsh surface. The marsh	Bw	Washover Fan	limited to periods of intense storm wave activity. Fan-shaped deposits of gravel located behind gravel beach ridges and cover-	F5	Algal Flats	High, coarse and fine-grained inter- tidal flats covered with the green algae, Enteromorpha erecta.	
			levee consists of sandy silt or silt-size sediment deposited from flood waters rising above channel margins, either from high river discharge into estuarine embayments or from storm-surge influenced flood tides from the ocean.			ing portions of marshes. Few wash- overs have been recognized as mappa- ble units on sand beaches. Washover fans are deposited by storm waves. Fan sediment is derived from the beach itself.	F6 Miscel	Veneered Ramp	Former boulder ramps presently covered by fine-grained sediment settling out of the water column.	
94	M4	Salt Pannes and Salt Ponds	Salt-water filled, non-vegetated depressions on the high salt marsh surface (salt pannes) or salt-water	Bs	Spits	Partially-submerged beach ridges which extend offshore into open water. This category includes tombolos (spits joining an island	M	Ledge	Subaerially or subaqueously exposed bedrock.	
M			filled depressions anywhere in the intertidal zone (ie. tidal pools). Salt pannes may be dry and covered with algae during late summer months.			with the mainland).	Mc	Fluvial-Estuarine Channel	Transitional channel between river and estuarine channels. The fluvial, tidal fluvial, or estuarine state depends upon the volume of river discharge entering the estuarine basin.	
				Flat E	nvironments Gently	sloping or level environments composed	Мр	Point or Lateral Bars	Accumulations of sediment adjacent to intertidal channel margins at channel bends (point bars) or along straight segments (lateral bars).	
	Beach Environments Deposits of unconsolidated sediment which extend shoreward from the lowest tide line to the upland or vegetated dune field or beach ridge. Dominated by wave processes.				primari lated i position current column.	y of fine sand, silt, and clay accumu- n relatively quiet water. Flats are de- nal areas controlled primarily by tidal s and sediment settling from the water Flat environments may be eroded tem- y by storm waves.	Ms	Swash Bars	Accumulations of sediment which occur where waves shoal onto intertidal flats. Lobate bars of sediment which accumu-	
	B1	Sand Beach	Beaches consisting of sand-size sedi- ment which are subject to high or mod- erate wave energy (waves generated in	F	Mud Flats	Flats comprised of sediment finer	Mf		late landward of an inlet separating a back-barrier estuary or lagoon from open-ocean water.	
	B2	Mixed Sand and Gravel Beach	Beaches consisting of sand and gravel-size sediment which are subject to high or moderate wave energy.	F1	Coarse-Grained Flat	than sand. Intertidal flats where sand or lar- ger-size material comprises most of the sediments. Coarse-grained flats	Ме	Ebb-Tidal Delta	Lobate bars of sediment which accumulate seaward of an inlet separating a back-barrier estuary or lagoon from open-ocean water.	
	В3	Gravel Beach	Beaches consisting of gravel-size sediment which are subject to high or moderate wave energy.	F2	Seaweed-Covered Coarse Flat	are subject to higher tidal-current velocities than mud flats. Coarse-grained, shallow subtidal and low intertidal flats which act as a	Mb	Fan Delta	Coarse-grained, fan-shaped deposits which accumulate on intertidal flats where upland streams drain onto high tidal-range shorelines.	
	B4	Boulder Beach	Beaches consisting of boulder-size sediment which are subject to high or moderate wave energy.		Coarse Frac	stable substrate for seaweed such as Ulva, Enteromorpha, Ascophyllum, and Laminaria.	Md	Spillover Lobes	Lobate bars of sediment which extend from flood-tidal deltas into estuarine or tidal channel areas.	
	SUBTIDAL ENVIRONMENTS									
Environments existing below lowest low water and subject to tidal current forces and wave-generated current forces.										
	Flat E	ments co and clay	, gently sloping, or level environ- mposed primarily of fine sand, silt, . Includes subaqueous exposures of ained, Pleistocene glacial sediments.	,		, intertidal and subtidal depressions ng tidal-current water.	Cs	Channel Slope	Gently to moderately sloping wall mar- gins of large tidal channels. Chan- nel slopes are confined to channel wall margins composed of sediment.	
	Fm	Mud Flat	Fine-grained subtidal flats.	[C1]	High-Velocity Tidal Channel	Tidal channels where maximum flow velocities probably exceed 2 meters per second (mps).	СЪ	Abandoned Tidal Channel	Former tidal channel no longer carry- ing flow sufficient to erode the chan- nel floor or margin walls. Abandoned channels usually occur in salt marsh	
	Fc	Coarse-Grained Flat Eelgrass Flat	Coarse-grained subtidal flats. Fine-grained and coarse-grained, shallow subtidal (low intertidal) flats	C2	Medium-Velocity Tidal Channel	Tidal channels where maximum flow velocities probably attain values between 1 and 2 mps.	Cf	Tidal Fluvial	tracts where meandering of the central drainage channel cuts off former channel segments.	
	Fs	Seaweed Community	which support dense stands of eel- grass (Zostera marina). Coarse-grained subtidal flats and bedrock ledges which support seaweed	[C4]	Low-Velocity Tidal Channel Estuarine Channel	Tidal channels where maximum flow velocities probably do not exceed 1 mps. Tidal channels where ocean and river	[61]	Channel	Lower portions of river channels under tidal influence but not carrying estuarine waters.	
	Fb	Upper Shoreface	growth. The inner subtidal slope which extends seaward from large exposed sand	· · · · · · · · · · · · · · · · · · ·		waters mix. Estuarine water salini- ties range between 0.5 ppt and 30 ppt.	T	Tidal Creeks	Small tidal channels draining salt	
			beaches where sediments are actively transported by bottom currents generated by storm waves. The upper shore-face is a sandy environment of constant wave should guider normal wave	C5	Estuarine Flood Channel	Estuarine tidal channels where flood- tide current velocities greatly ex- ceed velocities attained during ebb tide.	7	Marsh Drainage	marshes or intertidal mud flats. Man-made, rectilinear ditches dug in-	
M	Fp	Lower Shoreface	stant wave shoaling under normal wave conditions. The outer subtidal slope which extends seaward from the upper shore-	C6	Estuarine Ebb Channel	Estuarine tidal channels where ebb- tide current velocities greatly ex- ceed velocities attained during flood tide.	1	Ditch	to marshes to facilitate marsh surface drainage.	
			face. The lower shoreface is af- fected only by currents generated by storm waves. Lower shoreface sedi- ments grade from sand to mud in a	C7	Inlet Channel	High current-velocity channels cut through barrier beaches and connec- ting back barrier estuaries or la-	\sim	ine tweer	and marine (30 ppt salinity) waters and be- estuarine and river (0.5 ppt) waters.	
43°45′ 5′			seaward direction.	СВ	Dredged Channel	goons with the open ocean. Man-made, artificially-deepened or widened tidal channel.			boundary. eximate unit boundary.	