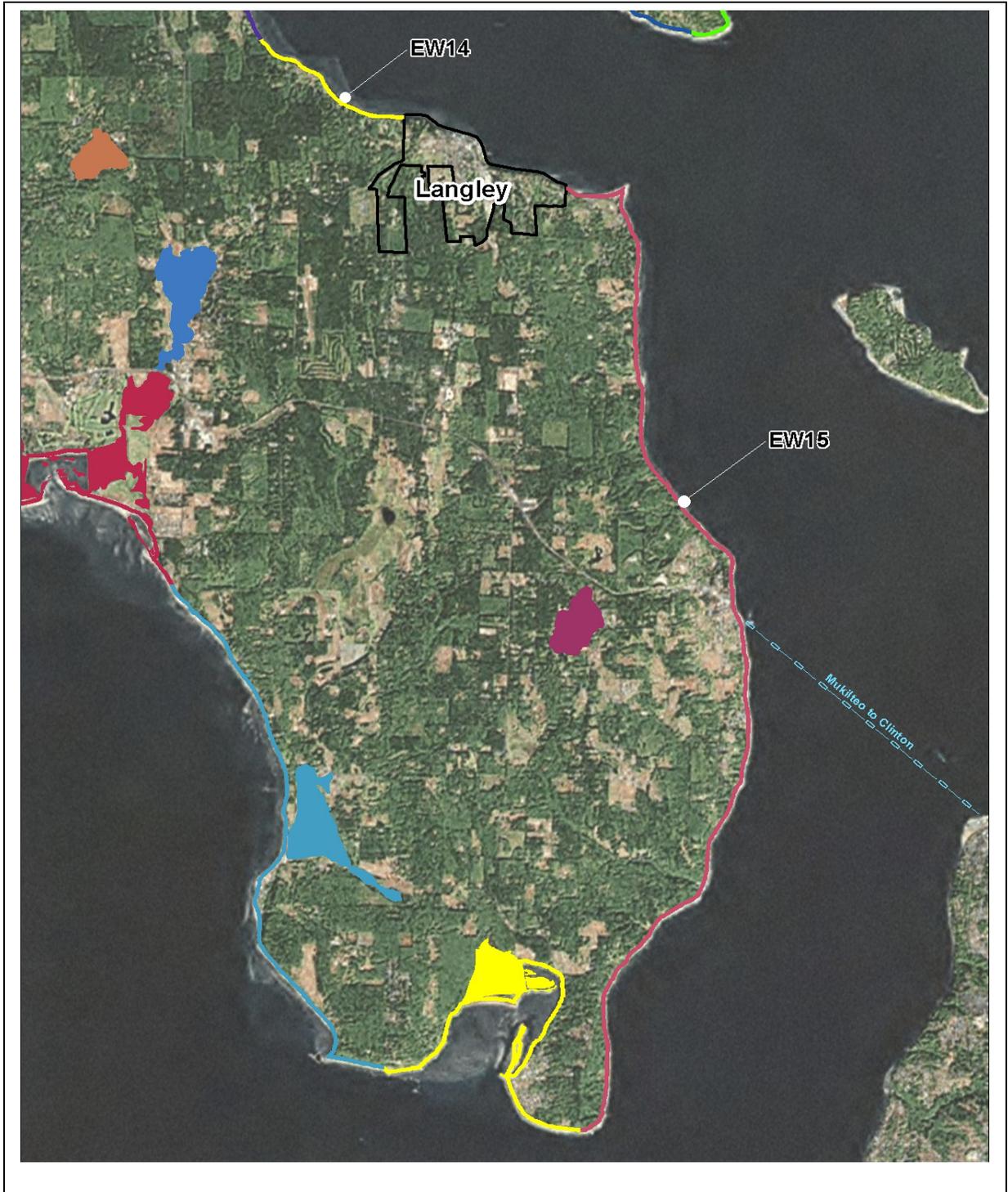


6.4.4 Reach Analysis

This section includes reach summaries (as reach information sheets) for East Whidbey Island's Possession Sound marine shorelines, as depicted in Figure 6-4.

Figure 6-4. Possession Sound marine reaches along the southeast shorelines of Whidbey Island.





REACH EW14

Southeast Whidbey Island (North Side of Langley, Possession Sound)

SHORELINE LENGTH:

1.56 Miles

REACH AREA:

39 Acres

PSNERP PROCESS UNITS:

6002, 6003

REACH SUMMARY

Reach EW14 is located along Saratoga Passage west of Langley. Geomorphic shoreline processes are characterized by a divergence zone abutting Reach EW14 extending southeast into a south-trending drift cell continuing through Langley along the Saratoga Passage shoreline. The reach is primarily feeder bluff shoretype, with intermittent areas of sediment transport and shoreline modification. A small accretion area is located at the mouth of the one stream draining to the shoreline, pictured in Oblique Photo A.

The reach includes small areas of associated wetland and does not include any coastal lagoons. The one short stream draining to the shoreline within the reach is not mapped as supporting salmonids. Marine aquatic areas provide sandlance, geoduck and Dungeness crab habitat, including contiguous eelgrass habitat. WDFW designates gray whale habitat throughout Saratoga Passage.

Much of this reach is mapped as feeder bluff; shoreline slopes are moderate and well vegetated with mixed forest and shrub communities. Shoreline uses in this reach consist of residences on large lots primarily landward of the shoreline. While substantial clearing has occurred, some marine riparian vegetation remains on these parcels. The northern portion of the reach is predominantly forested.

GEOMORPHIC KEY INFORMATION

Geomorphic Shoretype (Map 9)

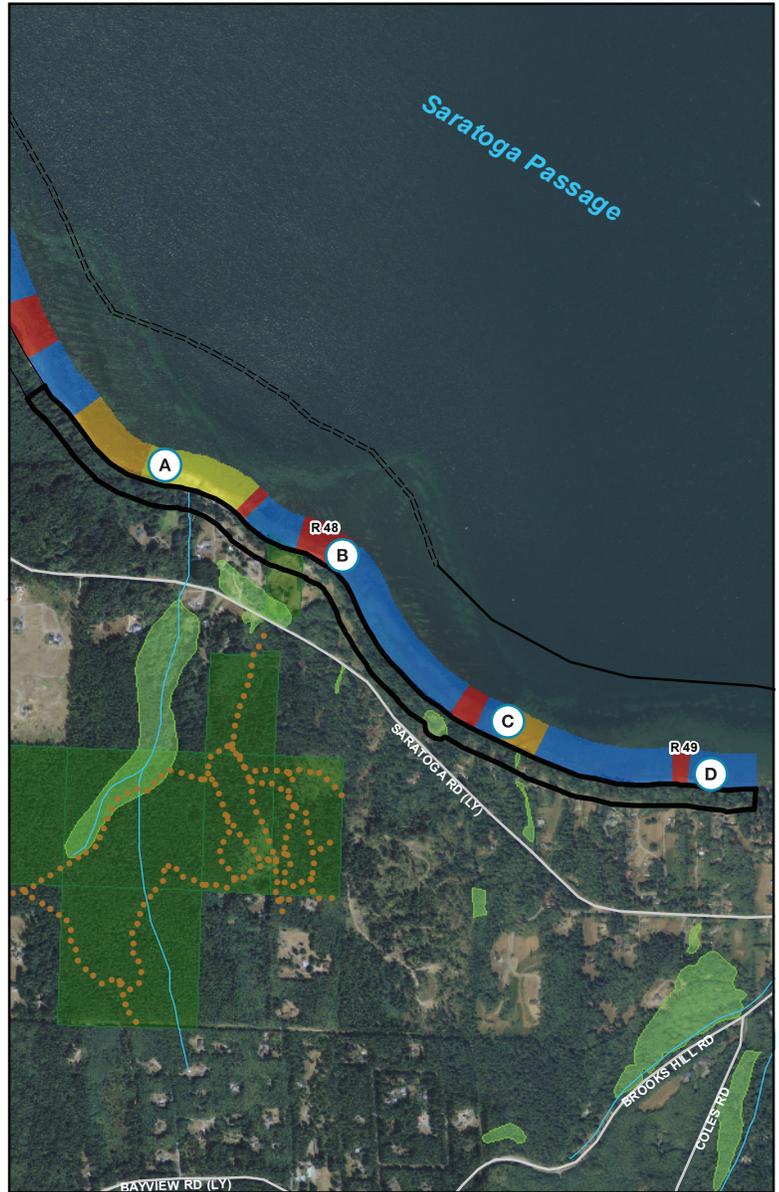
Feeder Bluff (61%), Transport Zone (15%), Modified shoreline (12%), and Accretion Shoreform (12%) fronting residential development

Net Shore Drift (Map 8)

A broad divergence zone marks the origin of a short drift cell with eastward drift that extends from south of Saratoga to Sandy Point. This reach is truncated by City of Langley jurisdiction at the southeast end.

Shoreform Current (Map 10)

Bluff-backed Beach (100%)



Overall Rating of Degradation

Least (100%)

Coastal Floodplain:

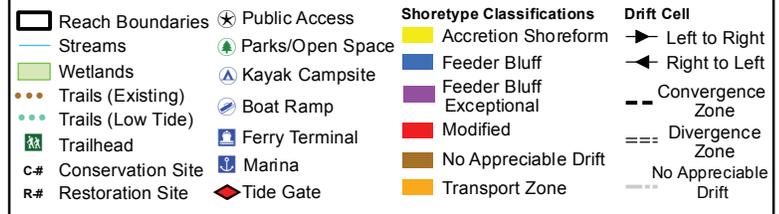
7%

Coastal Landslides & Toe Erosion:

Intermittent mapping of toe erosion, occasional landslide sites throughout reach.

Steep Slopes

60%



Shoreline Oblique Photos (2006)

HABITATS & SPECIES

Significant & Unique Features (Maps 5-7)

Extensive Dungeness crab habitat; geoduck habitat along shoreline; continuous and patchy eelgrass.

Shoreland Priority Habitats & Species (Map 5)

Bald Eagle buffer; Cliff

Marine Priority Habitats & Species (Map 5)

Gray Whale habitat (majority of reach)

Coastal Lagoons None mapped **Coastal Stream Mouths** 1 **Wetlands (Map 4)** 3%

Forage Fish

Sandlance 25%

Smelt None mapped

Herring None mapped

Salmonid Fish Use (Map 5)

None mapped (resident cutthroat along two short streams draining to shoreline in Langley). Nearshore areas are designated ESA critical habitat for Chinook (Puget Sound ESU) and bull trout.

LAND & SHORELINE USE

Shoreline Modifications (Map 13)

Intermittent armoring throughout reach - associated with residential development.

Public Access (Map 16)

No mapped public lands or public tidelands; limited visual access provided from adjacent roadways; significant access provided within Langley (e.g. Marina, tidelands) east of this reach.

Armoring (% of shoreline) (Map 13) 16%

Zoning (Map 11)

Rural (85%); Rural Forest (15%)

Overwater Structures (Map 14)

No overwater structures.

Current Land Use (Map 12)

Number of Parcels 39 **Average Parcel Size** 3.76 Acres

Primarily rural residential development, with significant vacant/undeveloped areas within the reach.

Shellfish & Aquaculture (Map 15)

Approved shellfish growing area throughout reach; no mapped shellfish beaches.

KEY MANAGEMENT ISSUES

- Drinking water supply (aquifer) issues associated with additional development (subdivision / intensified use) — saltwater intrusion and potential exacerbation from SLR; a portion of the reach is mapped as ‘High Risk’ for saltwater intrusion (Island County Risk Rating Map).
- Potential implications of sea level rise (SLR) barrier beaches (loss of habitat).
- Potential increases in rates of bluff erosion due to SLR or other factors.
- Slope / bluff stability for existing and future land uses at the top or toes of slopes (considering land uses and modifications such as clearing, creation of impervious surfaces, modified surface / ground-water dynamics).
- Slope stability, habitat and aesthetic implications of additional private shoreline access points on high bank shorelines (accessory to residential development).
- Subdivision — additional modification of feeder bluff / steep slope areas due to greater intensity of use.
- Subdivision and intensified use — additional modification of feeder bluff / steep slope areas and water quality implications (septic systems and road runoff) due to greater intensity of use.

RESTORATION OPPORTUNITIES

Restoration sites were identified in 2004 by Coastal Geologic Services (Appendix H).

R48: Remove failed waterward failed bulkhead that fronts new functioning bulkhead.

R49: Remove concrete bulkhead and fill.



REACH EW15

Southeast Whidbey Island (South Side of Langley to Clinton Ferry and Possession Point State Park)

SHORELINE LENGTH:

10.55 Miles

REACH AREA:

254 Acres

PSNERP PROCESS UNITS:

6002, 5035, 8001

REACH SUMMARY

Reach EW15 extends from south of Langley along the western side of Possession Sound. This reach includes the Washington State Ferries terminal at Clinton (oblique picture B), which provides ferry service to Mukilteo on the mainland. Geomorphic shoreline processes are characterized by convergence of two drift cells at Sandy Point, including a very long north-trending cell extending from the south tip of Whidbey (Possession Point) along the entire Possession Sound shoreline. Mapped geomorphic shoretypes vary primarily between feeder bluff and accretion shoreform along this relatively long reach.

The reach includes limited areas of coastal lagoon and associated wetland. Twelve short streams drain to the shoreline within the reach; three support salmonid use, including one with known spawning. Mapped marine aquatic areas provide sand lance, pandalid shrimp, geoduck and Dungeness crab habitat, including patchy eelgrass habitat.

This reach is largely rural residential, with residences both atop and at the toe of steep bluffs. Beachfront development is most common near the Clinton ferry terminal. Significant public access is provided to the shoreline adjacent to the ferry terminal, one of the largest overwater structures along the entire Whidbey Island shoreline.

GEOMORPHIC KEY INFORMATION

Geomorphic Shoretype (Map 9)

Feeder Bluff (46%), Accretion Shoreform (41%), Modified shoreline (11%), Feeder Bluff Exceptional (2%), and Transport Zone (1%) along north-trending drift cell

Net Shore Drift (Map 8)

Eastward drift originating south of Saratoga converges with northward drift from Possession Point, to form Sandy Point.

Shoreform Current (Map 10)

Barrier Beach (36%); Bluff-backed Beach (64%)

Overall Rating of Degradation

Least (5%); Less (93%); More (3%)

Coastal Floodplain:

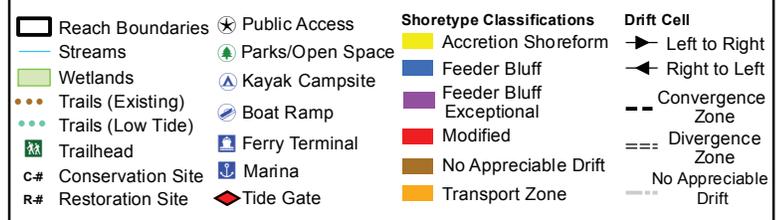
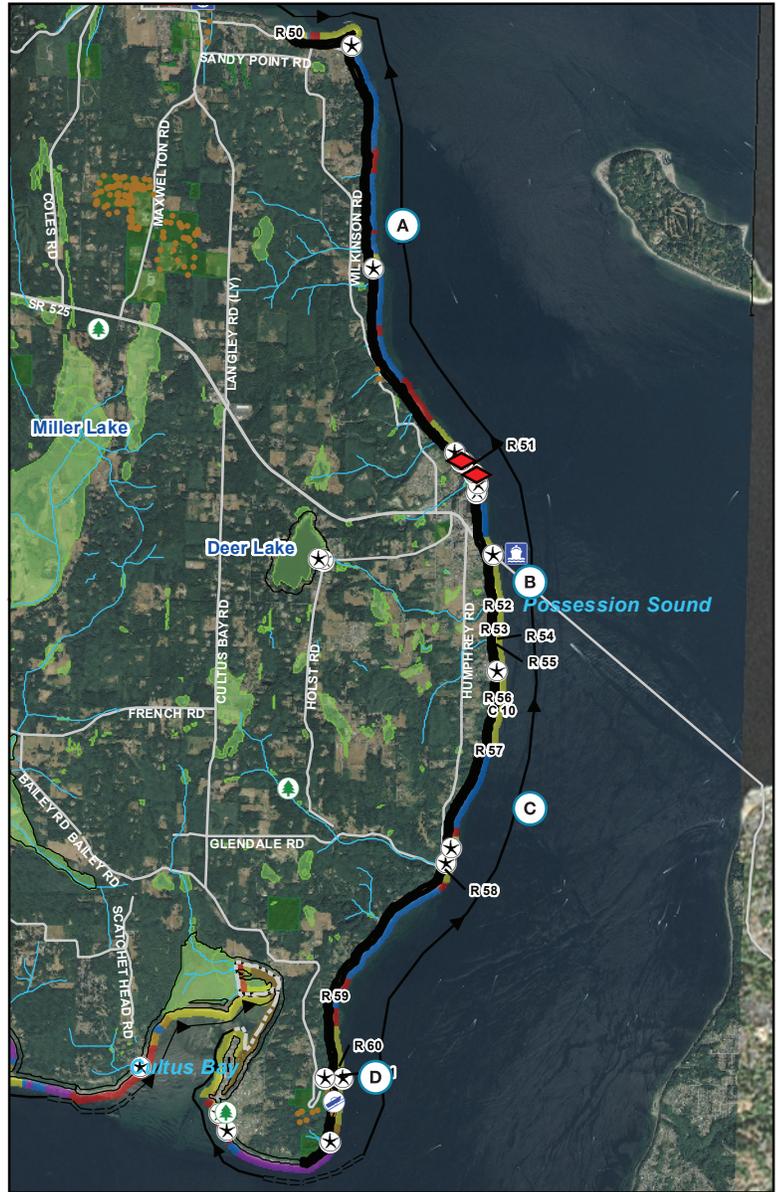
35%

Coastal Landslides & Toe Erosion:

Extensive mapping of both along all feeder bluff areas.

Steep Slopes

49%



Shoreline Oblique Photos (2006)

HABITATS & SPECIES

Significant & Unique Features (Maps 5-7)

Extensive Dungeness crab habitat; Pandalid shrimp habitat offshore; geoduck habitat along shoreline; continuous and patchy eelgrass. Documented Pigeon Guillemot nesting colony at Possession Point.

Shoreland Priority Habitats & Species (Map 5)

Bald Eagle buffer

Coastal Lagoons 2 acres (1%)	Coastal Stream Mouths 12	Wetlands (Map 4) 2%
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Forage Fish

Sandlance 16%	Smelt 9%
Herring None mapped	

Marine Priority Habitats & Species (Map 5)

Gray Whale habitat (majority of reach)

Salmonid Fish Use (Map 5)

None mapped (coastal cutthroat along two short streams draining to shoreline in Langley). Nearshore areas are designated ESA critical habitat for Chinook (Puget Sound ESU) and bull trout.

LAND & SHORELINE USE

Shoreline Modifications (Map 13)

Armoring focused in several short reaches, including Sandy Point Area, S. Witter Beach Place shoreline development (bulkheading and groins) and central Clinton waterfront (residential development extending S from ferry terminal); two tide gates located north of ferry terminal.

Public Access (Map 16)

Public tidelands throughout Sandy Point area; beach access, including County owned property at Brighton Beach; public facilities and access at Clinton ferry terminal; public lands and tidelands mapped near the end of Glendale Road; Possession Point State Park.

Armoring (% of shoreline) (Map 13) 10%

Zoning (Map 11)

Rural (65%); Rural Residential (25%); Rural Center (2%); Rural Forest (2%); Park (3%); Urban Growth Area (Langley 3.0%)

Overwater Structures (Map 14)

Several large overwater structures within reach: community pier/overwater boat storage structure (220 feet long and 45 feet wide) immediately west of Sand Point; Clinton ferry terminal (WSF) at terminus of SR 525 (overwater car holding area, 2 ferry landing areas - 624 ft. long and 200 ft. wide); several other private overwater structures along reach (not clustered).

Current Land Use (Map 12)

Number of Parcels 706 **Average Parcel Size** 0.99 Acres

Armoring focused in several short reaches, including Sandy Point area, south Witter Beach Place shoreline development (bulkheading and groins) and central Clinton waterfront (residential development extending south from ferry terminal); two tide gates located north of ferry terminal.

Shellfish & Aquaculture (Map 15)

Approved shellfish growing area throughout reach; Prohibited shellfish beach near Sandy Point, no other mapped or classified shellfish beaches.

KEY MANAGEMENT ISSUES

- Continued degradation of shoreline processes due to armoring (bulkheads).
- Disconnection of feeder bluff areas from shoreline due to toe armoring and / or development fronting bluff areas leading to greater down-drift erosion rates (issue is related to short portions of reach where development fronts coastal bluffs).
- Slope stability, habitat and aesthetic implications of additional private shoreline access points on high bank shorelines (accessory to residential development).
- Potential implications of sea level rise (SLR) barrier beaches (loss of habitat).
- Potential increases in coastal flooding and rates of bluff erosion due to sea level rise (SLR) or other factors.
- Potential use conflicts associated with public access to beaches and private residential property rights.
- Slope / bluff stability for existing and future land uses at the top or toes of slopes, (considering land uses and modifications such as clearing, creation of impervious surfaces, modified surface / ground-water dynamics).
- Subdivision and intensified use — additional modification of feeder bluff / steep slope areas and water quality implications (septic systems and road runoff) due to greater intensity of use.

RESTORATION OPPORTUNITIES

Restoration sites were identified in 2004 by Coastal Geologic Services (Appendix H).

- R50:** Remove failing wood bulkhead (structure is 1/3 creosote and aligned away from bluff toe).
- R51:** Remove derelict & abandoned creosote piles.
- R52:** Restore Deer Lake Creek mouth across backshore and beach.
- R53:** Remove approximately 6 abandoned creosote piles.
- R54:** Remove 2 abandoned creosote piles.
- R55:** Remove 1 abandoned creosote pile.
- R56:** Restore backshore marsh vegetation; vegetation community appears damaged due to change in hydrology.
- R57:** Remove abandoned creosote piles.
- R58:** Remove portion of bulkhead to restore good salmon access.
- R59:** Remove failing wooden groins (some creosote structures).
- R60:** Remove derelict creosote piles (35).

CONSERVATION OPPORTUNITIES

- C10:** Backshore Spruce Forest.
- C11:** Conserve marsh, coastal wetland & surrounding vegetation in backshore.